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Compilation of reports presented at a conference at the University of Michigan in November 1961. Conference participants included faculty members from schools of public health and special consultants from organizations concerned with accident prevention. Contains section reports dealing with areas for research in the prevention of accidents, continued education in accident prevention for public health personnel, and the preparation of specialists for accident prevention programs in public health. Also includes papers which review the present programs in accident prevention in schools of public health, official health agencies, and local health departments.

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TEACHING

ACCIDENT PREVENTION

IN SCHOOLS OF PUBLIC HEALTH

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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Report

of a

Conference

on

TEACHING ACCIDENT PREVENTION IN SCHOOLS OF PUBLIC HEALTH

at

The University of Michigan

November 8, 9, and 10, 1961

Conducted by

The Michigan School of Public Health

Co-Sponsored by

The Association of Schools of Public Health
The United States Public Health Service
The United States Children's Bureau

FOREWORD

CONFERENCE ON TEACHING ACCIDENT PREVENTION IN SCHOOLS OF PUBLIC HEALTH

This publication is a compilation of reports of work sections and of papers prepared for the Conference. Other "working papers" not prepared for this Conference are suitably referenced.

The purpose of the Conference was to seek to identify guides for schools of public health in the development of programs of instruction and research in accident prevention.

The participants included members of the faculties of schools of public health designated by their respective schools, together with consultants from among personnel of the National Safety Council, the Public Health Service, the Children's Bureau, and professional groups, societies, and organizations concerned with the prevention of accidents. Resource people included invited representatives of state and local health agencies conducting accident prevention. The several agencies and areas of special concern in accident prevention were represented in the membership of the planning committee.

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The Conference was conducted by the Michigan School of Public Health through the facilities of its Continued Education Service, and is No. 100 in the series of Continued Education Service events. The report, compiled by Dr. Johan Eliot, is Proceedings No. 100. The cost of conducting this Conference was supported in part by a grant from the Children's Bureau, and by Public Health Service grant SAph-78080.

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INTRODUCTION

All of the working groups at this conference started their discussions by recognizing the increasingly prominent place that accidents have assumed in the total health problems of the population, extending over the years of learning, child rearing, peak productivity, and old age. It was pointed out that schools of public health have a particular contribution to make in teaching, research, and service related to the interaction of human, environmental, and agent factors involved in accident causation and accident prevention. The public health profession as a whole can make its best contribution in the field of safety and accident control in the realm of human factors by utilizing its very broad approach to human beings, which contrasts, for example, with the more segmental and environmentally oriented approaches of fire safety and traffic safety programs. Analysis of the contributions of public health agencies cooperating with a great variety of other community agencies, shows that nearly always the public health agency's efforts have had this emphasis on human factors. Nevertheless, there is need for a still fuller application of the broad public health approach to accident prevention and control programs.

GROUP I:

ACCIDENT PREVENTION TEACHING IN THE GENERAL PUBLIC HEALTH CURRICULUM

There was ready agreement that the magnitude of the problem of accidents justifies interest by public health personnel, and that there is a need for all such personnel to have training in this subject. It followed that schools of public health should include accidents in their curriculum content.

It was considered that all students in schools of public health should have a basic minimal exposure to accident prevention, and that this could be provided by including the subject in the content of the "core" courses—epidemiology, administration, biostatistics, and environmental health. It was suggested that approximately five percent of the core curriculum might be devoted to accident prevention.

Specifically included should be: the epidemiology of accidents, the human factors, the environmental factors, and program planning and development in accident control, including legal aspects. While students should be oriented to the total problem of safety, it should be kept in mind that home safety has the greatest relevance to health workers.

The course on public health administration might well present the legal aspects of accident prevention and discuss administrative relationships with other agencies active in this field. The elements of a public health program in this area might also be covered in this course.

In epidemiology, it might be desirable to introduce an example of an investigation of an accident situation to illustrate this application of epidemiological methodology.

Many data on accident statistics are available for incorporation in the course in biostatistics, in both lecture and laboratory sections. Where contradictory conclusions have been reached concerning such a subject as accident susceptibility on the basis of statistical analysis, an exercise in locating fallacies might be of value.

It was also noted that a number of opportunities exist for incorporating the subject of accidents in other courses, e.g., school safety in public health nursing; suicide in mental health; traffic control, housing, recreation areas, radiation, and nursing homes in environmental health; accidental poisoning, drowning, burns, etc. in maternal and child health; and emergency care in medical care.

There was some consideration as to whether the complications of accidental injuries should be included as public health functions. This would include organization of emergency medical care and first aid. While there was not complete agreement, it was generally pointed out that activity in this direction would certainly reduce disability and loss of productivity in a community. Also, a number of public health agencies are presently engaged in such activities.

There was general agreement that there should be offered, in each school, at least one specialized course giving an overview of accident control, with particular emphasis on the role of the public health agency and the inter-relationship of the many official agencies and voluntary groups concerned with accident prevention.

Opportunities should exist for students who have a special interest in accident prevention to go more deeply into the subject, through library resources, elective courses, participation in special community programs, studies, or research.

There was general agreement that the success of any expanded teaching program in accident prevention would depend on having on the faculty an individual with special interest and competency in the field who would (1) coordinate the teaching activities in the field, (2) stimulate interest in the subject among other members of the faculty, and (3) be closely identified with teaching and research on accidental injury and death.

GROUP II:

ACCIDENT PREVENTION TEACHING TO PREPARE SPECIALISTS IN ACCIDENT PREVENTION FOR OPERATING PUBLIC HEALTH AND RELATED ACCIDENT PREVENTION PROGRAMS

The recommendations in this area were predicated upon the assumption that schools of public health which plan to offer specialty training in accident prevention will assign, or recruit additional, full-time faculty for the purpose of administering and teaching in this program. It is expected that adequate financial support will be given to this program, utilizing, if necessary, research training grants from government and funds from industry and foundations.

The discussion was concentrated upon the mechanisms for providing the specialty training. The group included several persons from operating agencies concerned with accident prevention. They represented the "consumer" group, the "utilizer of the educational product." At times, their opinions differed markedly from those of the members of the group who have academic appointment. Nevertheless, all divergence of opinion was compromised, except as noted below.

One of the first questions to be raised was, "Who and what is an accident prevention specialist?" For purposes of the discussion, an accident prevention specialist was defined as a professional public health person who is concerned primarily with the broad, general aspects of accident control, safety, and injury prevention as a public health activity and who utilizes highly trained, technical people to carry out his program. While it was felt that he may be identified as a specialist from certain points of reference, he is also a generalist in that his area of interest, his duties and responsibilities, and his abilities are so numerous, so encompassing, and so involved. He is a generalist in that he is concerned with all aspects of accident prevention. He is a specialist within the public health sphere of activity in that his professional concern is limited to accident prevention.

Since he is a generalist, his prior background may be from any one of the many disciplines that compose the public health team. His graduate public health training will have much in common with that of other public health workers. It was felt that a public health specialist in accident prevention should undertake the same core and general courses as those required by other public health specialists, because all public health workers will require the same wealth of knowledge of the fundamentals of public health. Specifically, it was felt that the common core courses should cover the following fields: epidemiology, environmental health, biostatistics, health education and behavioral science, and public health administration and practice. In addition to these core courses, it was felt that the following should be included in the list of required general courses: industrial accident prevention; industrial hygiene (or occupational health); and, if lacking in the candidate's prior education, courses in psychology, sociology, and physiology.

There was common agreement that the public health specialist in accident prevention needed training depth in two areas as related to accidents:

1. The environment--the physical, chemical, biological, and social environment of man, particularly a knowledge of how these may affect his behavior in relation to accidents, and

2. The individual--his physiological and psychological responses and reactions to his environment. If the core curriculum does not provide the fundamental information, then other courses should be added to provide it.

To fulfill the specialty training requirements, it was felt that a curriculum should be developed initially by the inclusion of a course on the basic principles of accident prevention. This course would be a required course for students specializing in accident prevention and an elective course for any qualified graduate student in the university. The specialty training program would be carried forward by a combination of all or part of the following:

1. Utilization of other courses that may be currently offered in the school of public health and in other undergraduate and graduate divisions of the university, especially in the school of engineering.

2. Guided special studies in depth, and research projects, to meet the special and particular needs of the individual, and/or

3. Development and utilization, when practical, of seminars, discussion groups, field studies, and other similar educational devices for the students specializing in accident prevention.

It was felt that a modest beginning, such as outlined above, was necessary to gain experience in what courses can and should be offered to these students. It was believed that from this approach, there would develop a definition of the scope and content of new specialty courses to meet the specific educational needs of these persons.

The discussion focused upon the content of a course on the basic principles of accident prevention. The subjects covered in the soon to be published book by McGraw-Hill entitled Accident Prevention were considered ideal, with the addition of a discussion of the problems of accident prevention in institutions. The majority of the group felt that details about the length of courses, the methods of teaching, the number of hours of instruction, and the scheduling must be left to the respective schools of public health in order to permit each school freedom in fitting this course into the school curriculum in the manner best suited to the needs and the school's capabilities.

In addition to the specialty course on the principles of accident prevention, the group recommended the development of a survey course on accident prevention as an elective course for students of public health other than those specializing in accident prevention. This course would be a condensed version of the specialty course, covering the same material, but in less depth and breadth.

It was felt that increased emphasis on the teaching of accident prevention to all students of public health is a necessary complement to the specialty training program. To this end, they recommended the inclusion in the core curriculum of specific references to accidents and accident prevention, when appropriate and germane. This recommendation is not restricted only to those schools which offer, or plan to offer, specialty training in accident prevention; it is directed to all schools of public health.

The group did not reach any decision concerning the length of the course or the degree that should be offered. This was left to the respective schools of public health to decide within the philosophy of the school. It was believed, however, that persons other than those with the usual public health background should be encouraged to apply and, if qualified, be admitted as candidates for the MPH degree. One of the professional disciplines which the group had in mind in this connection was the safety engineer.

The group recommended an inter-disciplinary approach to accident control and injury prevention, utilizing the knowledge and resources of such fields as engineering, medicine, and the behavorial sciences to develop research programs to add to basic knowledge. It was suggested that schools of public health assume the initiative in developing these research programs.

In summary, the group felt that there is an immediate need for some of the schools of public health to develop specialty training in accident prevention for professional public health persons. No school of public health at this time offers the type of professional training that these persons need. Most of the public health accident specialists in the field today acquired their professional competency in a piece-meal manner. It was felt that, in order for the public health accident specialist to utilize his training and knowledge effectively, his co-workers need a better understanding of accident prevention. The group, therefore, recommended the inclusion of accident prevention in the core curriculum of all public health students. The group felt also that the specialist needs the benefits of increased emphasis upon research, and therefore supported recommendations to provide additional research in accident control and injury prevention. Finally, it was felt that the public health accident specialist will not be a "finished product" after his specialty training, but rather he will be in need of continuing education. The group therefore supported plans to provide continuing education to the public health accident prevention specialist.

GROUP III:

AREAS FOR RESEARCH IN A SCHOOL OF PUBLIC HEALTH ACCIDENT PREVENTION PROGRAM

I. Introduction

Intensive research effort is needed to further identify factors and relationships involved in the causation of accidents, to devise ways in which the environment may be modified, to study human values, attitudes and motivations in relation to safety, and to test the efficacy of procedures to reduce the frequency of accidents and accidental injury. Central to most of these problems is the need for greater precision in definition of terms. Another problem relates to training in research methods, as applied specifically in the accident field. A deficiency in this area is apparent, both in regard to the present scarcity of trained personnel, and the serious inadequacies in previous research on accidents. The findings in a large proportion of the studies have been inconclusive because of defects such as (a) inadequate time sampling, and definitions and criteria of accidents, (b) study of single variables out of context, (c) biased sampling, and the lack of control groups, (d) lack of appropriate statistical treatment, and (e) conclusions based on intuitive rather than empirical information.

Epidemiological studies are most appropriate for assessing the magnitude of the problem, in identifying groups with varying degree of risk, and in testing the effectiveness of control programs. The usefulness of this approach in regard to accidents has thus far been only partially exploited, and an expansion of this method in studies of accidents is recommended.

Case studies of accidents and accidental injuries have been carried out frequently. This approach goes hand-in-hand with laboratory studies, human engineering, and the design of equipment and facilities. In many fields these methods have resulted in significant progress in accident control, and certainly work along these lines should be continued and extended.

Research in the behavioral sciences in the fields of human motivation, values, and attitudes bears on accident research in two ways: (1) how these factors relate to the occurrence of accidents, and (2) how these factors hinder the introduction and adoption of control factors. Emphasis thus far has been on the first question mentioned above.

When the field of safety is surveyed as a whole, there are certain relationships which stand out sharply, suggesting worthwhile areas for additional research. For example, in traffic safety, the association of excessive use of alcohol with fatal accidents is striking. Also there is an apparent increased risk of accidents among young drivers. In home safety, there has been little exploration of engineering and equipment-design principles to accident control. Marked advances in industrial safety have been achieved by improved design of machines and tools as well as control of environmental variables. However, there is increasing recognition that many accidents are apparently related to human factors and attitudes. Greater attention needs to be given to recreational safety, as larger portions of our population spend more time in such activities. Moreover, as technological advances continue, new hazards of accidental trauma are created as some older ones are eliminated. The research activity in the field of accidents may be expected to be ever changing in meeting current problems.

With the increasing recognition of accidents as a major environmental problem, health and health-related community agencies should sponsor and conduct research into the causation and control of various kinds of accidents and injuries. Schools of Public Health are among the groups with research competence and a high level of concern. They should be aware of research being carried out in their geographic areas, and should encourage or initiate such work, offering consultation and assistance where possible in the design and conduct of studies by other agencies. They should also be in a position to coordinate research activities in their communities to avoid wasteful expenditures of research effort in overlapping or competing projects.

II. Important Considerations Relating to Accident Research in Schools of Public Health.

A. The Goals of Accident Research in Schools of Public Health

1. To provide basic information on accident causation:

   a. which may be directly applied in the design of specific preventive measures.
   b. which may lead to specific hypotheses of causation, subject to further analytic studies.
   c. which may improve and expand the body of knowledge available for instructional purposes.

2. To provide information on the control of accidents:

   a. through the design of preventive measures based on the specific findings of research, and the hypotheses resulting from research.
   b. through the testing and evaluation of preventive measures, both in terms of the effectiveness of achieving desired end results, and of their feasibility and efficiency as operating programs.
   c. through data which may improve and expand the instructional content for teaching methods of accident prevention.

B. Some Basic Requirements of Research on Accidents and Accident Prevention.

1. Specific definitions of the phenomena to be studied (e.g., should only accidents resulting in injury be included?)

2. Selection, or development, of meaningful measurements of accident phenomena, suitable for qualitative analysis.

3. Adaptation of epidemiological methods to analysis of host-agent-environment interactions in accidents to identify major problems and important interaction areas for more specific analysis. (See appended outline.)

4. Development and adaptation of experimental designs for accident studies.

5. Development of conceptual models of accident processes for the testing of theories of accident causation and control.

C. The Selection of Appropriate Problems for Study in Schools of Public Health.

1. Many disciplines in Schools of Public Health now deal with some of the factors involved in accident processes or their control.

2. In the immediate future, problems are likely to be selected for study on the basis of the interests of individual members of various departments in any given school.

3. Thus the particular areas in accident study and control in which research might be undertaken probably will not be considered at present on a priority basis. in terms of the relative urgency or magnitude of particular problems.

D. Examples of Problems in Accident Causation Which May be Clarified by Various Research Disciplines Now Represented in Schools of Public Health.

1. The high incidence of accidents and injuries among children and youth in general. and the age variation within the younger age group in regard to particular classes of accidents, e.g., poisonings, drownings, and motor vehicle accidents.

2. The relatively poor survivability among the elderly from falls and other classes of accidents. in contrast to their generally lower non-fatal injury rates as compared to younger persons.

3. The high frequency among accident repeaters of individuals having personal and social maladjustment.

4. The inference from statistical data that problem drinking and alcoholism underlie a large part of the fatal motor vehicle accident problem.

5. Concomitant disease or temporary physiological conditions are believed to be causally related to numerous accidents. Controlled studies to develop incidence and frequency data and to produce information useful in estimating risks associated with specific conditions for preventive programs are lacking.

6. Stimulating drugs, tranquilizers, and sedative medications have been noted in some accidents. The frequency of such involvement is unknown, and there has been very little experimental work on the behavioral effects of specific pharmacological preparations, in regard to their implications for safety.

7. Considerable attention has been paid to the deleterious effects upon health of various toxic agents in the environment, especially in industry. Very little is known of impairments in behavior which may occur with exposures lower than those injurious to health and which may influence safety.

8. Many injuries result from poor design of equipment in relation to human capabilities. Analysis of equipment and working areas in terms of principles established by engineering disciplines offers promise of reducing many types of accidents.

E. Evaluating the Effectiveness of Accident Prevention Measures.

1. There have been very few adequately designed and properly controlled studies in regard to the effectiveness of accident prevention measures or programs for reducing accidents or injuries. The absolute or relative effectiveness of most methods presently used is simply not known.

2. A central problem is the urgent need to develop research methodology in this very complex area, where strict experimental controls are very difficult.

3. This problem is one in common with the evaluation of the effectiveness of many other preventive programs in public health. Thus, the development of methodology for evaluation appears to be an important contribution which may be made by Schools of Public Health, even though application of the techniques may more frequently be carried out by agencies in the field.

4. An important aspect of evaluation, frequently overlooked, is the dependence of the conclusions regarding the end-results of the program upon information concerning the internal effectiveness of the field operations. An informative discussion of the experimental requirements of evaluation efforts, including promising study designs and the development of internal information systems may be found in the working paper by Dr. Fay Hemphill.

F. Stimulation of Research on Accidents in Schools of Public Health.

1. With a few notable exceptions, comprehensive research programs in the field of accidents have not been initiated thus far in Schools of Public Health.

2. Where research programs have been initiated, they have usually involved an interest in accident study on the part of individual faculty members.

3. There has been little effort to stimulate research on accidents among Schools of Public Health or to indoctrinate research workers in public health disciplines of the needs and possibilities in this area. A recent example of an attempt to stimulate research was the financing of a number of "study groups" throughout the country by the Association for the Aid of Crippled Children, bringing together public health, medical, safety, and other disciplines to define problems for research or control projects. It would seem appropriate for Schools of Public Health to assume more leadership in such efforts.

4. In the past, there have been inadequate funds to carry out research on accidents. In recent years, however, the Division of Research Grants of the National Institutes of Health has encouraged proposals for research in the accident field, and has made available appropriate funds for recommended projects. During the past ten years the Commission on Accidental Trauma of the Armed Forces Epidemiological Board has also sponsored a broad program of research in the field of accidents having implication for both civilian and military populations.

   In some instances, research fellowships have been financed by state health departments. Also, training grants and research fellowships may now be secured through several federal agencies.

Outline of the Epidemiological Study of Accidents

I. The objective of this approach is to identify the multiple influences giving rise to accidents and accidental injuries, and to determine the causative interactions between them. This type of analysis requires consideration of the persons having accidents, in relation to the agents of injury and the times and temporal sequences of the events, and in relation to the prevailing environmental influences.

II. Classes of factors to receive attention in the epidemiological analysis of accidents. (This topical classification is arbitrary and does not indicate the interdependence among factors

A. The characteristics of persons in accidents (host factors).

1. Characteristics associated with age and sex (including both biologically and culturally determined factors).
2. Personality traits in relation to accident susceptibility (emotional habits, attitudes, etc.)
3. Physical and physiological variables (e.g., physical defects, chronic disease, psychomotor coordination).
4. Temporary personal factors influencing behavior (e.g., fatigue and acute emotional states).
5. Temporary physiological states (e.g., concurrent disease, drugs, alcohol).

B. Characteristics of the agents in accidents (with emphasis on the interaction with host factors).

1. Specific injury producing characteristics of various classes of agents.
2. Characteristics of the mechanisms of interaction between host and injurious agents.
3. Accident inducing characteristics of agents resulting from poor design for human use.

C. Environmental influences affecting the host or host-agent interactions.

1. Influences of the physical environment (e.g., atmospheric contaminants, toxic agents, radiation, illumination, noise, temperature and humidity, etc.).
2. Influences of the social environment (direct, and indirect or cultural).
3. Influences of the biological environment.

GROUP IV:

CONTINUED EDUCATION IN ACCIDENT PREVENTION FOR PUBLIC HEALTH PERSONNEL

The group recommended that schools of public health recognize continued education as a proper function of these professional schools. Hopefully, a sufficient number of schools of public health will offer continued education activities so as to make such offerings available on as wide a geographical basis as possible.

While it is hoped that each of the several schools would be active in accident prevention, these activities need not be uniform, but rather should be related to the interest and resources of the particular institution. In developing continued education for public health personnel, schools of public health should be alert to the resources existent in other educational institutions, agencies, and programs.

The group commended certain observations to the attention of those who do plan continued education. These observations concerned the following:

A. Groups for whom continued education courses in accident prevention should be organized:

1. It was suggested that more material can be presented, with more direct relationship to the public health worker's own personal tasks, if most continued education efforts are prepared for specific disciplines, e.g. nurses, health officers, sanitarians.

2. It was emphasized that, in general, the role of a school of public health is to "teach the teachers." It is a physical impossibility for a school of public health to consider providing inservice education for all of the personnel of active public health agencies. Hence the objectives of continued education must not only be to present information, but also to equip responsible public health personnel with teaching aids and materials necessary to teach other staff members.

3. It was recognized that personnel who will need continued education in accident prevention can be classified as follows:

   a. Full-time in public health and full-time in accident prevention—these are the "specialists," who will need additional intensive short courses in particular aspects of accident prevention.

   b. Full-time in public health and part-time in accident prevention—these are the general staff of public health agencies, each of whom is concerned with accident prevention at many points in the course of his work, and needs some specialized knowledge relevant to his field.

c. Full-time in accident prevention, but not in public health—these are "specialists" in safety councils, traffic agencies, fire departments, and so forth, who need some of the knowledges of human behavior and community organization and education that can be provided by schools of public health, as well as intensive courses in special aspects of accident prevention.

d. Part-time in accident prevention and not in public health—these are workers in related agencies (home demonstration agents, school teachers and administrators, nursing home operators, visiting nurses, child welfare workers, and so forth), who are in contact with many people and who need to include accident prevention in their teaching and other activities. Emphasis again should be placed on "teaching the teachers," with conferences designed for those responsible for training, administration, and curriculum development for these groups.

B. Mechanisms through which content could be presented, and suggested materials.

1. Appropriate outlines, summaries, and bibliographies.

2. Books and pamphlets in loan kits.

3. Case studies, especially valuable when prepared and presented by personnel attending the continued education session.

4. Demonstrations, especially those which can be learned and operated by the trainees.

5. Films, slides, film strips, recordings, "teaching machines," and other teaching aids, especially those which can subsequently be used by trainees.

6. Schools of public health may be encouraged to participate in experimentation with educational presentations at a distance, i.e., through radio and television programs and correspondence courses.

7. Schools of public health may be encouraged to develop continued education programs in cooperation with other responsible professional groups, such as state and regional public health organizations, the Academy of General Practice, and the Academy of Pediatrics.

C. Suggestions regarding content and curriculum of continued education in accident prevention:

1. It was pointed out that the prospectus for any short course should state professional background and experience needed by persons for whom the short course is offered, e.g., nurses, sanitarians, health educators, medical officers, and so forth. If the prospectus is not specific in requirements, it is then essential to find out the backgrounds of those attending the course. If more than one discipline is present at a course, it may be desirable to split by discipline at least part of the time, for technical content.

2. At the present time, most persons going into safety and accident prevention jobs in public health are drawn from the ranks of those already in public health, in such fields as venereal disease, tuberculosis, health education, and maternal and child health. They have not generally been safety specialists drawn from other agencies. It therefore seems that there is a definite need for a survey short course available to such persons starting in the field of accident prevention, as well as highly specialized courses to be taken subsequently.

3. The following is a suggested outline for a survey short course in accident prevention:

   a. Scope and content of accident problems today

   b. Current concepts of accident etiology

      (1) Human factors

      (2) Environmental factors

      (3) Agent factors and "chain of circumstances" concept

   c. Organization and structure of present community safety activities

   d. Methods of accident control

   e. Human motivation and educational methods

   f. Legal aspects of safety and accident control

   g. Summary of research in progress

SUMMARY OF CONCLUSIONS

The conference determined that there is an immediate need for some of the schools of public health to develop specialty training in accident prevention for professional public health persons. In order for the public health accident prevention specialist to utilize his training and knowledge effectively, there is a need for all schools of public health to include accident prevention where possible in the core curriculum offered to all public health students, and to offer a separate course on the principles of accident prevention.

The public health person primarily concerned with accident prevention needs the benefits of increased emphasis upon research which will provide additional information for accident control and injury prevention. All members of the public health team and especially the accident prevention specialists are in need of continued education in this rapidly emerging and specialized field. In view of these expressed needs, it was recommended that some of the schools of public health expand their research and continued education efforts to include accident prevention.

A LOCAL HEALTH DEPARTMENT ACTION PROGRAM IN ACCIDENT PREVENTION

Dwight M. Bissell, M. D. *

What is the stimulus that causes a local health department to be interested in accident prevention? Sometimes an interested citizen, as happened in Australia, or a health department staff member. In our city a staff member looked at our mortality data with amazement and then at the large number of injuries which were treated at the First Aid Station. As the discussion arose among the staff increased, each member kept a record of his own accidental injuries. It was almost frightening to them to discover that one was surrounded by possibilities for accidental injuries and occasionally injuries occurred. At this point staff members realized that accidents do not happen, but are planned unintentionally by someone's carelessness. This sensitization or allergic reaction to the sequence of events heading to an accidental injury and the means for prevention seems to be a necessary step for all who would be effectively indoctrinated in this activity.

Such personal involvement aids greatly in the development of a plan directed toward the health and safety of both the planner and others. An effective plan for accident prevention resembles the epidemiology of other diseases, namely, a search for an etiological agent, a susceptible host and means for the prevention of the spread of this disease. How can this contagion be stopped? How can one be immunized against it?

A few years ago we undertook a project in the prevention of home accidental injuries within the City of San Jose. We had data to show that a number of home accidental deaths were occurring. In fact, all accidental deaths were the fourth cause of all deaths in our city. This City's home accidental death rate was about that of the State of California, and while it was not as low as the State of Rhode Island, it was not as great as some of the other States. We felt that there was an opportunity to decrease the number of accidental injuries, even if we could not lessen the number of home accidental deaths. Since our objective in public health is to prolong life, we felt that prevention of home accidents would be in accordance with the general philosophy of the public health profession. Our staff wanted to find representative citizens of the community who might have some acquaintance with or interest in the prevention of accidental injuries. We collected the names and addresses of organizations and interested persons who might fit into this category: Safety Councils, P. T. A.'s, apartment house owners, insurance companies, and many others. The degree of interest in some of these organizations was, of course, much greater than others. Casualty insurance companies would naturally have more interest than undertakers or architects. Our problem was to find a reason to bring this group together to consider this subject because many of them were strangers to each other. Various methods were suggested, but it was finally decided that the best method was to telephone each of these individuals and explain our purpose briefly and ask for a definite appointment so that there could be a face-to-face discussion with a Health Department staff member. While this procedure was time consuming and took a number of days, it was productive and interested more than seventy persons who represented that many organizations or groups who were interested in preventing home accidents. Our challenge to this group was that there was an opportunity to aid in meeting a public health need; with adequate community background data to aid them in understanding the problem, we would like to ask for an opinion concerning this as a worthwhile project. Were home accidents something that needed to be studied and was San Jose a place where such a study could be accomplished? At this time a community sample survey was being made of illnesses, and it was planned that it would provide a background of data to

*Health Officer, San Jose, California

determine how many accidental injuries were occurring in the community at that particular time. This data was not available for our committee of seventy to consider, but the survey was under way and it was anticipated that the data would be available eventually. A budget was prepared for the Accident Prevention project: personnel were employed including a Health Educator, a Public Health Nurse, and a Sanitarian. All of them were capable people to communicate with others and interpret this Home Accident Prevention project.

After thorough discussion and consideration, the Community Committee decided that the Accident Prevention project should be undertaken. It would improve the services which were being rendered by the existing personnel in the Health Department, sharpen their interest in home accident prevention, and give them a better understanding of what needed to be accomplished. In-service training also pointed out ways in which they could be effective. The general public was informed as to the need, what was being done to meet it, and what they could do to help. Every voluntary committeeman was necessary to the successful operation of the project.

A few printed materials were used which were available from the National Safety Council and other organizations, such as insurance companies, which provided us with some excellent materials. Occasionally we used the newspapers for press releases when the information had news value. Radio and television were used to a very limited degree. The important point, however, is that these materials had a relatively limited use and were only to supplement the face-to-face communication which is still the most effective way of getting a message across. It was impossible for home accident staff members to visit each person in the community to discuss his problems in home accident prevention. It was possible for many of the staff Public Health Nurses, Sanitarians, and others to reach a rather large segment of the population directly or indirectly. The most important group, of course, was the representatives from more than seventy organizations who took the message back to their membership. These people also took ideas into their homes, and to men, women, and children, who began to think in terms of "Is my home really safe, what can I do to improve this situation?" The psychological problems of whether fear is the best motivation to accomplish home safety was doubted greatly. No doubt fear motives may have had some effect, but it was felt that home accidents could be prevented more adequately by appealing to a rational behavior. For example, it was just not reasonable to leave tools, play equipment, and other things in the walk-way where people might fall over them. It is not reasonable for children to be playing in vacant lots where there is broken glass, burning rubbish, and other debris which can injure them. It is not reasonable to permit swimming pools to be constructed with such dimensions that a diver is apt to break his neck or injure himself in his recreational activities. We found that there were certain things, such as prevention of poisoning of small children, that had greater motivation and could be more easily and readily accomplished than the building of safe houses. Unsafe houses have been built for years, and unfortunately, they cannot all be modified to become safe now. While both are reasonable and necessary, building in safety then became a long-term project while poisoning prevention became a short-term project.

It would be impossible to give you all of the details as to the responsibility that each person or group had in this community organization project. The success which each group had depended upon its ability, its leaders, and the leadership which the staff was able to give it. A voluminous report was issued which contains the details of projects attempted and the estimated degree of success achieved. After the first phase of our project was concluded, it was found that our basic statistical evaluation data was not

problem; contributions by entomologists devoting special attention to the subject, intended to stimulate realistic study on the part of operators encountering resistance, and facilitate conclusions that may contribute to the capacity of the industry more effectively to combat resistance where encountered.

#76 *Light and Vision*, 1958, 438 pages, 8½ x 11, $5.00. A long overdue treatment of the subject of light and vision designed to identify and illustrate in readily understandable terms the basic principles in these areas that govern seeing in various lighting environments, and to outline measures that will most effectively employ these principles in creation or adjustment of lighting environments to optimum conditions for seeing. School lighting presented by the nation's best recognized authorities; plant and office lighting for industrial hygienists, business and industrial executives, and their technical personnel concerned with problems in these areas. The "New Footcandle Tables," published in the August 1958 issue of the *Journal of the Illuminating Engineering Society*, are reproduced as Appendix A of this book, by permission of the *Journal*.

Industrial Medicine and Surgery states: "Prior to the Ann Arbor Conference too many sacred cows were being nurtured in the fields of vision and lighting. Recognizing the prior achievement of no ultimates, the Ann Arbor Conference was a mission of slaughter of vision and lighting fallacies."

#79 *Comparative Medicine in Transition*, 1960, 500 pages, 6 x 9, $5.00. The proceedings for the Institute on Veterinary Public Health Practice conducted October 6–9, 1958. Financial assistance by the National Institutes of Health and the Hartz Mountain Products Corporation in the publication of this contribution to science permits the School to award courtesy copies of the initial printing of the book to qualified institutions, agencies, and members of groups concerned with comparative medicine, in accordance with the policy adopted by the Editorial Board. These groups may include any of the disciplines in public health practice, research, and education; professors in schools of medicine, public health, veterinary medicine, dentistry, and nursing, and the faculties of other educational institutions; professional and scientific organizations and libraries; members of professional and scientific groups interested in the subject matter. Requests by members of these groups and others not here listed as eligible for award of courtesy copies will be considered, as the applications are received, with respect to the policy adopted by the Editorial Board.

#81 *Legal Aspects of Public Health*, 1959, 69 pages, 8½ x 11, $2.00. To meet the need expressed by health officers for better understanding of laws, scope of jurisdiction, limitations, procedures under them, the formulation of regulations, what is evidence, how to prepare it, how to present testimony, the rudimentary principles of court procedure, the obligations and privileges of material and expert witnesses, the rules, practices, and limitations that govern testimony, and resources of the prosecutor's office both in services and information.

#82 *Water Filtration*, 1959, 133 pages, 8½ x 11, $3.00. A thorough exploration of the subject presenting fundamental design and operational information through the consideration of each functional part of a filter, various factors which affect the design and operation of component parts, and the hydraulic principles of filters.

#83 *Industrial Water Conservation*, 1959, 117 pages, 8½ x 11, $3.00. A contribution requested by industry, designed to serve the needs of engineers and upper management of various industries, for exploration of "just what is being done and what can be done by industry to cut down on its use of water . . ."

#84 *Health Supervision of Children*, 1959, 90 pages, 8½ x 11, $2.00. Designed to point up some of the problems in the health supervision of children and to consider their solution in achieving better health supervision for all children.

#86 *Prevention and Management of Handicapping Conditions in Infancy and Childhood*, 1960, 250 pages, 6 x 9. Distribution of this publication has been made possible by a grant from the U. S. Children's Bureau. Professional workers in the field of maternal and child health who are interested in securing a copy are requested to write to Donald C. Smith, M.D., School of Public Health, The University of Michigan, Ann Arbor, Michigan.

• More detailed descriptions of these items are available upon request.

THE UNIVERSITY OF MICHIGAN SCHOOL OF PUBLIC HEALTH

Continued Education Service Publications

These books and compilations of contributions are published as the proceedings for short courses conducted by the School, through its Continued Education Service, to serve the various professional groups in public health, together with members of professions, business, industry, and official agencies whose activities have a relation to health. The audiences were largely national in distribution.

Most of these publications, as did the courses, bring together in one place reliable basic information, selected from vast stores of knowledge and prepared by experts in their respective areas. Many of these books are out of print. The following are still available (see inside for price and description):

- ☐ 33. Air Pollution ☐ 38. Radiological Health ☐ 43. Noise
- ☐ 50. Home Accident Prevention
- ☐ 50a. Investigation and Application of Home Injury Survey Data in Development of Prevention Procedures
- ☐ 50b. Home Injuries—Appendix A
- ☐ 50c. Home Injuries—Appendix B
- ☐ 56. Public Officials, Third Health Conference
- ☐ 58. Encyclopedia of Instrumentation for Industrial Hygiene
- ☐ 62. Evaluation in Public Health ☐ 63. Housing Improvement
- ☐ 65. Safety Practices in Water and Sewage Works
- ☐ 66. Public Officials, Fourth Health Conference
- ☐ 67. Dental Public Health Practice
- ☐ 70. Radioactive Liquid Wastes, Part II ☐ 73. Insect Resistance
- ☐ 76. Light and Vision ☐ 79. Comparative Medicine in Transition
- ☐ 81. Legal Aspects of Public Health ☐ 82. Water Filtration
- ☐ 83. Industrial Water Conservation
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#38* *Radiological Health*, 1951, 140 pages, 8 x 11, $3.00. A connected story covering the fundamental physics related to the questions of what radiation is, its sources, the units of measurement and how it is detected, the various uses and applications, and conclusions with respect to the public health aspects.

#43* *Noise; Causes, Effects, Measurement, Costs, Control*, 1952, 191 pages, 8 x 11, $5.00. The behavior of sound, its effect on man, measurement and control. An initial authoritative coverage of the phases of the subject indicated.

#50* *Home Accident Prevention*, 1953, 148 pages, 8½ x 11, $1.00. The product of the first workshop on home accident prevention. A critical inventory of present (1953) fundamental knowledge of the field, developed out of the work of committees with national distribution of working members.

#50a *Investigation and Application of Home Injury Survey Data in Development of Prevention Procedures*, February 1952—January 1953, 81 pages, 8¼ x 10¾, $1.50. This investigation was supported by a research grant from the National Institutes of Health, Public Health Service.

#50b *Home Injuries, Appendix A*. Procedure Manual, 191 pages, 8½ x 11, $1.50.

#50c *Home Injuries, Appendix B*. Environmental Appraisal, 75 pages, 8½ x 11, $1.00.

#56 *Public Officials, Third Health Conference*, 1954, 77 pages, 8½ x 11, $1.00. A forum of exchange of information between the administrators of public health services and the members of state and local agencies that appropriate the money toward meeting the needs indicated. Subjects include home and farm accidents, the economic aspects of tuberculosis care and control, the growing problems in chronic disease, fringe area development problems, and fluoridation.

#58* *Encyclopedia of Instrumentation for Industrial Hygiene*, 1956, 1,243 pages plus xvii, 9 x 12, 1,400 illustrations, $30.00. The University of Michigan Institute of Industrial Health and School of Public Health. Technical Editors: C. D. Yaffe, A. D. Hosey, and D. H. Byers. Authorities who have examined this monumental treatise on instrumentation have been unanimous in their evaluation of this work as a most useful tool that will prove invaluable to workers concerned with all phases of measurements in the areas covered in the 7 sections of the book. These sections cover 500 instruments, produced by 60 manufacturers, for measuring air contaminants in occupied spaces; for use in laboratories; for air pollution and meteorology; for air velocity and metering; for sound and vibration; for ionizing radiations; and for ultra violet, visible, and infrared energy. It appears that the widespread demand for this book, both here and abroad, will soon exhaust our supply. *It is not intended to reprint. Therefore, if you would like to have a copy of this publication, it is suggested that you get your order in soon.*

#62 *Evaluation in Public Health*, 1954, 45 pages, 8½ x 11, $1.00. Report of the first national conference.

#63 *Housing Improvement*, 1955, 157 pages, 8½ x 11, $1.00. Emphasizes significant factors in the trend of thought on housing improvement. Indicates the possible and appropriate public health contribution in community effort. Indicates the relationship of other agencies to housing and emphasizes the importance of coordination of health agency efforts with them, intended to stimulate better understanding of housing and more active participation of health agencies in study and solution of such problems in their respective communities.

#65 *Safety Practices in Water and Sewage Works*, 1956, 106 pages, 8½ x 11, $1.00. Presents basic information on the subject of safety in water and sewage works. Outlines the salient features of a safety program. Defines safety hazards in the plant and on the distribution and collection systems, and points out ways and means for their elimination. Designed to stimulate interest toward inaugurating safety programs in water and sewage utilities and strengthening existing ones.

#66 *Public Officials, Fourth Health Conference*, 1956, 79 pages, 8½ x 11, $1.00. Preventive aspects of mental health.

#67 *Dental Public Health Practice*, 1956; Revised Edition 1960, 200 pages, 8½ x 11, $3.00. A critical analysis of definition, place, objectives, contributions and newer horizons of dental public health practice, with attention devoted to indices of oral health, basis for indices on oral occlusion and perodontal disease, laboratory tests for dental caries, epidemiological aids, prevalence of oral disease, statistical technique for evaluating dental data, securing data for new treatment and surveys, including all surveys of state oral health programs. The demand so far exceeded the supply, that it has become necessary to reprint this publication. In this 1960 edition, certain errors discovered in the original publication have been corrected. The reprinted book is available at the original price.

#70 *Radioactive Liquid Wastes, Part II*, 1956, 189 pages, 8½ x 11, $3.00. Presents fundamental material on the concepts of detection and measurement, control and disposal: (1) To assist in preparing communities to cope with potential problems, (2) To prepare technical personnel for more extensive study in scientific approach to the solution of problems in the control and disposal of radioactive liquid wastes, and (3) To serve members of technical staffs of official and other agencies, and consulting engineering firms.

#73 *Insect Resistance, Second Conference on Pest Control*, 1957, 46 pages, 8½ x 11, $1.00. A review of current entomological knowledge of the problem in the light of the pest control industry's experience and capacity for dealing with it, of concern to members of the industry and official agencies in all phases of the

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#88 *Chronic Disease Control,* 1961, 211 pages, 8½ x 11, $3.00. Review of current status of public health chronic disease programming, and consideration of possible new approaches to chronic disease control. Designed to serve public health physicians, nurses, nutritionists, and health educators concerned with administration of chronic disease programs at state and local levels.

#89 *Second National Conference on Evaluation in Public Health,* 1961, 35 pages, $1.00. This compilation includes the general introductory papers for this working conference. The reports of the seven task forces have been published and will be distributed by the American Public Health Association under the title, "Guide to a Community Health Study."

#90 *Third Short Course on Plumbing Problems,* 1961, 125 pages, 8½ x 11, [illegible]. A treatment of basic principles related to daily practices in plumbing, and identification and explanation of the influence on plumbing problems exerted by new practices and the characteristics of new materials that advancing science has brought into use, including authoritative dissertations on plastics. Designed to serve plumbing inspectors, plumbers, plumbing contractors, architects, engineers, and sanitarians.

5.00

#92 *Coagulation of Water for Filtration,* 1961, 100 pages, 8½ x 11, $3.00. A compilation of manuscripts for dissertations presented at the "sixth high-level course" on water works problems planned by the Education Committee of the Michigan Section of the American Water Works Association. A highly scientific exploration of coagulation as the major factor in preparation of water for filtration, this book deals with coagulation in all of its aspects as a "follow up" to the equally scientific treatment of filtration in *Water Filtration* (see #82).

#93* *Handicapped Children in Michigan—Problems, Programs, and Services,* 1961, 100+ pages, 8½ x 11. Handling charge of $1.00 per copy for out-of-state orders. Clinical discussions of prematurity problems in vision, together with comprehensive treatment of cleft lip and cleft palate, are featured. Facilities available and procedures for dealing with handicapping problems of children in Michigan are outlined. Designed to serve local health officers, supervising nurses, and staff members of official and voluntary agencies in Michigan.

#94* *Leadership in New Community Health Problems,* 1961, 100+ pages, 8½ x 11. Handling charge of $1.00 per copy. Institute conducted in collaboration with a committee of the Health Officers Section of the American Public Health Association. An advanced treatment of leadership and its application to selected problems, including an analysis of the qualities and requirements of leadership per se, and presentation of opportunities and methods for leadership by health officers and other administrative personnel in the fields of chronic disease and environmental health. Highlighted are such topics as: leadership technique, community power structure, medical aid for the aged, suburbanization, and accident prevention.

#95 *Second National Congress on Environment,* 1961, 100+ pages, 8½ x 11, $3.00. Compilation of the addresses presented by nationally recognized authorities in their respective fields, at the Second Congress conducted by the School of Public Health and the National Sanitation Foundation in collaboration with the American Public Health Association. An exploration of environmental resources and their value and usefulness for man in terms of needs for industry, government, and conservation, in keeping with health, social, and economic trends. Consideration of principles and methods of practice which will encourage a maximum development of our environmental resources for safety. The Proceedings provides a record of a unique occasion where industry, official agencies, leaders of advanced thought in science, and the public presented their own concerns with the environment and together considered the problems for the benefit of all.

#96* *The Administration of Local Dental Public Health Programs,* 1962, 100+ pages, 8½ x 11, $3.00. The proceedings of the Fifth Workshop on Public Health Dentistry, designed to improve the administrative horizons and develop a critical appraisal of the scientific information of those dentists responsible for the successful operation of programs organized to provide the services of dental public health directly to the recipients in local communities. Other objectives were to develop technics to improve the inter-relationships with state departments of health, and a national roster of local programs and personnel. Financial assistance by the National

* Publications marked with an asterisk are in process.

Institutes of Health in the publication of this contribution to science and practice in public health dentistry permits distribution of courtesy copies of the initial printing without cost to libraries, educational institutions, members of public health and voluntary agencies, professional and scientific societies, and other organizations and groups concerned with the subject.

=97* *Heart Disease Control*, 1962, 100+ pages, 8½ x 11, $3.00. Review of current status and consideration of possible new approaches to heart disease control, and delineation of respective roles of official agencies and heart associations in the total program. Designed to serve public health physicians, nurses, nutritionists, and health educators concerned with the planning and administration of heart disease control programs, and secretaries of heart associations.

SPECIAL PUBLICATION

=67a *Classification and Appraisal of Objections to Fluoridation*, 1958; reprinted 1961, 82 pages, 8½ x 11, with bibliography, $1.00. Available for purchase in any quantity for community or other educational use; quotations on cost basis will be made on request. Prepared by Kenneth R. Elwell, D.D.S., M.P.H., as a graduate student, from material produced by 20 graduate public health dental students who were assigned the task of identifying all objections to fluoridation that have been advanced, and providing answers based on the most reliable sources of scientific information. The work was done under the direction of Kenneth A. Easlick, D.D.S., Professor of Public Health Dentistry, who has also edited the material in this publication.

Additional Scheduled Events

=99 *Hospital Safety Workshop*, October 23–24, 1961. Conducted by the School of Public Health and the University Hospital at the request of and in collaboration with the Michigan Hospital Association. Safety as concerns the patient is considered by the sections for the pediatric, adult, handicapped, adult general medical and surgical groups, for patient and supporting services, and the physical environment—building and facilities. The program for the Institute on Hospital Safety, February 15–16, 1962, will be determined by the conclusions of this workshop.

=100 *The Teaching of Accident Prevention in Schools of Public Health*, November 8–10, 1961. Review and evaluation of current information, practice, and instruction, by designated representatives of Schools of Public Health and invited specially qualified resource people from national, state, and local administrative and research agencies, with a view to providing some guidelines for Schools of Public Health in the development of instruction in this area.

=102 *Childhood Handicapping Conditions*, January 4–5, 1962. Exploration of problems on which local health officials have indicated a need for information, including emphasis on early recognition and prompt treatment of handicapping conditions with special coverage of cardiac disease in childhood.

=103 *Institute on Hospital Safety*, February 15–16, 1962. Conducted by the School of Public Health and the University Hospital, at the request of and in collaboration with the Michigan Hospital Association, to treat the subject of safety with respect to the patient, as indicated in the conclusions of the workshop conducted October 23–24, 1961 (see =99).

=104 *Conference of Economists on Health Problems*, May 10–12, 1962. A workshop for information exchange and self-education—exploratory and research oriented—seeking the identification and application of principles of economics to medical care, pursued in depth. For economists and those with a major interest in the application of principles of economics in medical care programs, by invitation only. A program of the Bureau of Public Health Economics in the Department of Community Health Services, in collaboration with the University Department of Economics and the Public Health Service.

=105 *Seminar on Community Air Quality Standards*, June 11–14, 1962. Concerned with the philosophy and feasibility of community air quality standards rather than undertaking in this seminar to set standards. Participation by invitation of specially qualified individuals from the top echelons in the fields of medicine, engineering, research, and industry concerned with the problem, and some members of enforcement and administrative agencies.

=106 *Institute on Cancer Control*, June 25–30, 1962. For physicians, nurses, and other health personnel working in official or voluntary agencies in the field of cancer control. The current practices in cancer control will be reviewed and possible new approaches to the problem will be considered.

statistically significant. The committee of seventy people which had sponsored this activity was then interviewed concerning their subjective evaluation of this project. The results showed that there were weaknesses in community organization, but that there were more strengths than weaknesses. A differential measure of the results of this type of activity could not be made for there were many other agencies, individuals, and groups, both Local, State, and National, which were contributing greatly to the prevention of home accidents. This project could certainly not claim all of the credit for the reduction in home accidental deaths or injuries which have occurred in San Jose. The population is changing rapidly with a vast number of people migrating in to the community who had not been reached during the early stages of the project. These factors made statistical measurement both quantitatively and qualitatively an almost insurmountable problem. Given a large enough sum of money, some of the evaluation might have been improved.

When our home accident prevention activities began in San Jose in 1950, the population was 95,000. By 1960 it had grown to 204,000 people. Deaths occurring in 1960 are listed in Table I to show an example of the age distribution, cause, and sex of home accident deaths.

TABLE I

HOME ACCIDENT FATALITIES BY CAUSE, SEX, AND AGE

San Jose, California

(By place of residence) - 1960

Cause of Death	Number	Sex	Years of Age
Falls:			
On stairs	1	F	71
One level to another	1	M	47
On same level	2	F	83, 85
Unspecified	1	F	88
Fire and explosion of combustible material	3	M	2, 52
Injury due to firearms	1	M	32
Poisoning:			
By aspirin and salicylates	1	F	24
By analgesic and soporific drugs	1	F	42
Total	11		

Median Age - 67+ Ratio male to female - 4:7

Table II indicates the reduction in number of home accident deaths in spite of a rapidly increasing population. While an age-adjusted population would need to be considered, due to the large number of deaths in the age group over 60 years, the rate would still decrease over this decade.

Many problems were left unsolved, such as studying the change in the accident pattern, developmental phase in the life of children, and developing effective means of preventing accidental injuries among the older children up to the age of twenty-five. An effective plan is needed for the prevention of home accidents among the aged and infirmed. These problems are recognized and an effective community organization needs to be developed for these activities.

Local health departments need to develop action programs that are within their communities' understanding, interest, capabilities, and financial ability to carry to a successful conclusion.

Sporadic efforts may have some value, but special weeks or days, sudden efforts, and then a withdrawal, in our opinion, are not as effective accomplishing accident prevention as well organized and planned community efforts. It is difficult to prove by objective measurement that accidental injuries have been prevented and accidental deaths have not occurred.

Not all local health accident prevention programs need to be research problems. A large enough body of knowledge is available in some aspects of accident prevention for a local community to use it effectively in accident prevention activities. I should therefore like to challenge those who indicate that extensive and detailed statistical studies must be made before any accident prevention activities are undertaken. We agree that much effort has been wasted in misguided and unnecessary activity. A rapid survey of the literature would indicate, for example, that accidental poisonings occur most commonly among children between the ages of one and six years, and that the commonest poison is aspirin. With these facts and without an extensive study of each community, a local health department could plan and develop a worthwhile activity in this area of accident prevention. Research activities are necessary and need to be expanded, but more action programs are needed to test the research which has been done.

TABLE II

DEATHS FROM HOME ACCIDENTS BY AGE
San Jose City, 1950-1960
(By place of residence)

Total Residence Deaths	Year	Under 1	1-4	5-14	15-24	25-34	35-44	45-54	55-64	65 and Over	TOTAL
1023	1950	3	1	1	2	-	-	1	1	9	18
963	1951	2	2	1	-	1	2	2	-	6	16
1054	1952	1	-	1	-	-	1	1	2	8	14
1086	1953	2	1	-	-	-	-	1	2	6	12
1049	1954	-	2	1	-	2	-	1	2	11	19
1115	1955	1	1	-	1	1	1	-	-	5	10
1189	1956	-	-	1	-	-	-	-	-	3	4
1231	1957	2	-	2	-	-	-	2	1	6	13
1226	1958	1	-	-	-	-	1	1	3	2	8
1442	1959	1	3	1	-	1	-	1	2	6	15
*1835	1960	-	2	1	1	-	2	3	1	2	12
*Not Available											
Total Deaths by occurrence											
	TOTALS	13	12	9	4	5	7	13	14	64	141

A SURVEY OF THE TEACHING OF ACCIDENT CONTROL IN SCHOOLS OF PUBLIC HEALTH IN THE UNITED STATES AND CANADA

Charles M. Cameron, Jr. M.D.*

As the influence of accidents upon health in the United States has gained wider recognition, more emphasis has been given to the teaching of public health accident control content in the professional schools of public health in North America.

A survey based on data submitted by 11 schools of public health in the United States and Canada, completed in the spring and summer of 1961, revealed that while public health accident control content is present in all curricula, the amount, scope, emphasis, and direction of this teaching is by no means uniform.

Although there is considerable variation in the classroom coverage of many subject matter areas in this group of professional schools, there is perhaps more variation in the teaching and emphasis on accident control than upon teaching in heart disease and cancer control, and material related to other major causes of community morbidity and mortality.

Since accidents and their extent, distribution, causes, prevention, and other factors can be related to statistics, epidemiology, sanitary science, public health practice and many other subject matter areas commonly taught in schools of public health, for purposes of this survey, faculty members were asked to report only those classroom sessions and other activities that were clearly and distinctively identifiable as accident centered. Additional information was collected relative to specialized programs of study for those with particular interest in public health accident control short courses, teaching aids used, as well as plans for future development in this field.

A generous and cooperative response from the participating schools facilitated the compilation of the following findings:

— All 11 schools of public health responding to the request for information indicated that some lectures, seminars, problems, and/or full courses dealing with accident control were included among the current instructional offerings of the institution.

— Eight of the 11 schools include accident control content in courses which are required of all or most students enrolled in the master of public health degree programs.

— Typical content in these "required" courses in the 8 schools was from two to four lecture or seminar hours dealing with the epidemiology of accidents and/or public health accident control activities at the national, state, or community levels.

— In 10 out of the 11 schools, students with particular interests (or electing courses) in fields such as maternal and child health, industrial hygiene, sanitary science, and other areas have available elective courses entirely or partially devoted to some special aspect of accident causation or control.

— Ten of the 11 schools report on an average of two to six elective courses (or required courses for students with particular interest) with some content identifiable as accident centered or related. Data indicate the number of students taking such courses was something less than half the total enrolled student body.

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— The range of all accident control teaching (required course and elective courses) among the schools varied from one or two seminars per year given by a single faculty member in one school of public health to three schools which reported some 30 to 60 hours of instruction per year identifiable as accident related, involving 15 different courses, taught in six or more divisions or departments of the institution.

— Courses exclusively concerned with accident control are available as electives in three schools of public health. One course in safety education is administratively located in a school of education but available to students from a school of public health; at another school the course is concerned largely but not exclusively with accidents in an industrial or occupational setting; and at a third institution there is an elective seminar course dealing with public health accident control techniques and programs.

— In the total of 11 schools of public health, identifiable accident content was found in courses taught by faculty from 32 departments, sections, or divisions. These were, in order of frequency of reportings:

Public Health Practice or Administration	6 Schools
Industrial/Occupational Health	6 Schools
Maternal and Child Health	5 Schools
Epidemiology	5 Schools
Sanitary Science	4 Schools
Public Health Nursing	3 Schools

(NOTE: These data should be interpreted with caution since the organizational patterns of the schools differ considerably. For example, some departments of public health practice include maternal and child health, public health nursing, etc.)

— There is considerable evidence that much instructional content indirectly relating to accident control, but not usually identified as such, is included in the curricula and content of schools of public health. Courses in epidemiology, biostatistics, sanitary science, and public health practice normally include much basic material as pertinent to accidents and community safety as to any other field of public health practice.

— During the past academic year, there was no program of study specifically designated as designed for students with major interest in accident control. Three schools indicated that plans are now being made for the development of such programs. Two of these schools developed specific grant requests to support accident control activities during the past year. An additional two schools indicated that such programs could be developed if there is sufficient interest.

— Only two schools reported short courses, conferences and workshops specifically related to accidents. Beginning in 1953 the University of Michigan has been host to five conferences (including the conference dealing with the teaching of safety in schools of public health). The University of North Carolina has had short courses intermittently since 1954.

Teaching Aids: Teaching aids utilized by faculty members included textbooks, films, and other materials. Frequently mentioned were reading lists, bibliographies, and reference material compiled by the interested and responsible faculty members.

Textbooks mentioned included the following:

"Principles of Public Health Administration" by John Rankin
"The Incurable Wound" by Berton Roueche
"Individual and Community Health" by W. W. Stokes
"Safety Management" by Simonds and Grimaldi
"Safety Education" by Florio and Stallcrd

Films included:

"Safety Organization"
"Safe Clothing"
"Safe Handling"
"Accidents Don't Just Happen"
"One Day's Poisoning"
Locally prepared slides

Other Materials mentioned were:

Public Health Service Publications
University of Michigan Symposia
Material from the Kansas State Board of Health
"Accident Facts" and other material from the National Safety Council
Statistics from the U. S. National Health Survey
Material from the White House Conference on Highway Safety
Material from the Metropolitan Life Insurance Company

Accident Research: While research activities were excluded from the survey, it is well to indicate that schools of public health are included among the U. S. centers for safety research. The activities of the Harvard School of Public Health as well as others merit special mention in this regard.

Selected Comments by Respondents: Some faculty members responding to the request for information provided general comments pertinent to the subject of the survey and of the conference. Among these were included the following:

"...the assignment of a full-time faculty member to the broad field of accident prevention would unquestionably facilitate and improve the quality of our accident teaching...he would initially take over the units in existing courses and...go on to develop a specialty curriculum to give extensive work in the subject."

"...believe that teaching grants are needed to make research findings available to instructors and students in a systematic way..."

"One problem is to obtain additional basic data from research in the field so that teaching will have sufficient content to have academic respectability. Another is to train additional well-qualified physicians and other biological scientists with a major interest in this field. A third is to encourage Congress,

the USPHS, foundations, industries, and individuals to contribute adequate funds for research and teaching programs in schools of public health and medicine. A few schools of public health might devote a major effort to the problems of accident control, but all such schools should make some contribution through programs in this area."

"More basic information is necessary for the elucidation of fundamental facts related to causation of accidents, their prevention and control. Hopefully, newer questions will be asked concerning evaluation of accident promoting situations in housing and other living environments, better coordination of accident prevention activities within industries, man-machine relationships, and man-environment relationships."

"We have given our students careful instructions to avoid the word 'accident' in making epidemiological investigations. Much of the investigative work in the field has been poor and one of the reasons is the word 'accident' which implies an act of God rather than a predictable preventable event."

"It is my belief that if this conference is to make a real contribution to the field, the word 'accident' should be stricken from its vocabulary..."

"There is some question in my mind as to whether or not specific programming in such detail (in accident prevention) would be important for a full course, or even an appreciable part of a full course. Is this appropriate graduate curriculum content? The principles taught in problem analysis, program planning, organization and administration generally should be applicable here as in other subject matter areas."

"Accident prevention is obviously important to all members of the public health team, especially to those working in maternal and child health and in occupational health, but we question the need for specialization in this field except perhaps for safety directors."

"Although some would question the desirability of a specialized, detailed program of study in schools of public health, it is regrettable that those public health agencies seeking specialized training for accident control workers have had to turn to other types of professional schools to find curriculum, courses and content to provide background essential for successful employment."

"At the present time, some of the schools specialize in different areas of research, teaching, and service. Perhaps it is well to anticipate that one or two schools should develop some particular interest in the matter of community safety."

SUMMARY

Data were solicited from the schools of public health to determine the current level of teaching directly identified as concerned with the subject matter area of accidents and their control. All of the schools indicate that some attention is given to the subject, but the scope and content of this instruction varies significantly among the 11 schools providing data.

In 8 of the schools, content is included in courses required of most graduate students and some students may receive considerable instruction in connection with special-interest or elective courses in fields such as industrial hygiene, maternal and child health, and the like.

Although 2 schools indicated plans to develop programs giving special emphasis to public health accident control, such a level of interest was lacking or not expressed in other institutions.

The opinion was expressed that schools of public health vary more in accident control instruction than in their attention to heart disease, cancer, radiological health, air pollution, and the other major community health problems of the 20th century.

APPLICATION OF EVALUATION TECHNIQUES IN A PROGRAM OF ACCIDENT PREVENTION

F. M. Hemphill, Ph. D. *

Let us agree that the title of this "working paper" opens the door to provocation of statement and thought. Hopefully, passage over the threshold may provoke some well planned action in the application of evaluation techniques.

Those who plan to pursue this treatment of the subject should be prepared to consider the assumptions and definitions on which the context is based. Evaluation of this paper should be made in light of the stated definitions and assumptions rather than against some oracular philosophy.

Assumptions and (implied) definitions:

1. Evaluation requires planning in light of specified aims and objectives.

2. Successful evaluation techniques are planned as part of the over-all program and are executed with timely dispatch as an integral part of the "program."

3. Objective evaluation results from information. This assumption connotes that planned systems of information appropriate to "program evaluation" are required in the structure of the "program."

4. The science of constructing "systems of information" is immature. Construction of such "systems" depends on the purposes for which the information is to be used.

5. Participation in planning and executing systems of information essential to program evaluation is a prime responsibility of those charged with directing the program.

6. A "program" is constituted of planned and coordinated activities. Activities may be grouped into "projects" and, hence, a program may be constituted of activities and projects.

7. Objective evaluation of a program is dependent on information relative to the activities which compose the program.

8. Objective evaluation of a program may differ from objective evalvation of the end results of a program. Separate plans may be indicated for evaluation of (1) "program" and (2) "end results."

9. Activities, of which programs are constituted are selected because of the belief (or hope) that the execution of the activities will bring certain end results. However, the planned program may be faithfully executed producing a program evaluation of "excellent" but the end result may be unnoticeable or even deleterious. For example, a program of vaccination against poliomyelitis was believed to be beneficial in 1955 but for some manufacturer's lots of vaccines these activities resulted in deleterious

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effects to many persons. Had there been no way of getting information regarding distribution and identification of the vaccine packaged from these lots and the activities (including anatomical site of vaccination) of the vaccination procedure, evaluation of end results would have been hampered, perhaps, impossible.

10. Public Health workers should shore up their terminology and definitions if they would engage in objective evaluation of "programs" as defined above. The above largely rules out the use of "disciplinary programs" such as "public health nurse programs," "health officer programs," "health education programs," etc., and restricts use of the term to "tuberculosis control programs," "injury prevention programs," etc.

11. Health and medical activities (programs) are sometimes, but not always, formulated on the bases of scientific findings. Protocols in nurseries of prolonged use of oxygen therapy for all premature infants (prior to 1953) is an example of an activity introduced without adequate scientific bases. Faith without much scientific justification that insecticides placed in selected rat "runs" appeared to produce beneficient end results regarding murine typhus fever. Other examples could be composited to indicate that health programs may be based on either scientific findings or purely on "faith." Whatever the bases for formulating the program (planned, coordinated activities), these bases should be clearly understood by those who plan and execute the activities of *the program*.

12. An activity which contributes no information toward either (1) program evaluation or (2) end results evaluation should be examined with view toward elimination. However, subjective evaluation for budget increments, public relations, etc. may dictate retention.

13. All activities aimed primarily at public relations, legal requirements and budget benefits should be openly recognized as such by all personnel involved in public health programs in order that these objectives not become confused with the "health centered" activities of programs.

14. Subjective evaluation of programs is outside the scope of present considerations of this paper. This limitation does not intend offense against the use of intuition, oracles, or ouija boards. This paper deals with evaluation based on information.

15. Accident prevention programs may differ from injury prevention programs. Clearly, those who select activities to include in programs should keep the objectives in mind. For example, whether the activities of care and rehabilitation of the injured will be included depends on the objectives.

What is to be prevented: Accidents? Selected accidents? Injuries? Selected injuries? Combinations of selected accidents and injuries? Answers to these questions would appear to be requisite to the selection of activities which will make up the program of prevention.

Those who plan such programs would do well to reduce their considerations to writing. Steps taken in planning activities will some way lead to viewpoints on

evaluation. Thorough planning will provide for the framework of definitions and/or descriptions essential to specify the information systems necessary for objective evaluation. Moreover, completed plans for the information will show the flow of information through the following steps:

a. collection
b. editing
c. statistical control
d. coding
e. processing
f. analyzing
g. interpreting
h. distributing
i. feedback for altering the system

Planning of programs directed toward the control and/or prevention of diseases having known etiologic agents and modes of transmission proves to be difficult and time consuming. Planning accident (unspecified) prevention may be too nebulous or too expensive to undertake. Electing to consider a program limited to "poisonings" (a minor part of the total injury problem) may be found to tax the energy of those who plan as well as the budget of agencies. Consider momentarily the idea of a program of prevention of poisoning. Have there been any reports of experience on programs which show objective evidence of outcomes of such programs? Have "poison centers" reduced the reported incidence of poisonings? Have programs (planned coordinated activities) associated with "poison centers" produced objective evidence for evaluation of the program? of outcomes of the program? Certainly study of past experiences with activities, programs, and outcomes should prove beneficial in electing evaluation techniques. Let's use them.

Classic among examples of the categories of techniques used for objective evaluation of outcomes are the following:

1. Observation of change (temporal)

2. Observation of change (severity)

3. Observation of change inequality of frequency of events or observations during same time interval. So-called "experimental-control group" designs are examples.

4. Cross-over designs of "treatments." Such a design may be developed by taking an "experimental-control" study and at a specified time exchanging the two protocols, thus giving opportunity to observe effects.

Scientists make use of all of these with many refinements. Mature scientists recognize the pitfalls of logic which attend the use of categories (1) and (2) and are loathe to accept decisions based on changes over time unless replications are presented showing similar trends. In other words, post hoc ergo propter hoc reasoning is looked upon askance by many. Applied to accident-injury prevention program outcomes, the technique of establishing baselines of rate of frequency-severity, then making comparisons with rates on the same populations during subsequent periods is considered a weak form of logic. Strength of conviction from such evaluations may come from (1) overwhelming magnitude of change and/or (2) replications which produce similar results, especially when performed by differing directors or differing populations etc. This brief reference to categories of evaluation techniques is far from exhaustive. Those mentioned are classic to researchers who evaluate outcomes of procedures, biologics, etc.

Evaluation techniques for appraising activities may be of a quite different nature from those for appraising end results. For example, the activities of a baseball player may be evaluated by (1) batting average and (2) fielding average. Such information is made possible by a well planned, thoroughly executed information system. However, such information aims to evaluate performance and does not aim to evaluate outcome of team play such as is reflected in "games won and lost." Evaluation of outcomes requires information differing from that for performance. Organized baseball requires a rigid and extensive complex of sub-systems of information recording observations and determinations of all decisive acts of performance of individual players together with over-all team performance and outcomes of team play. Study of the evaluation techniques used in baseball and other sports might be of assistance to our health program planners. Note the specificity of terminology, the clarity of rules, and the orderly requirement of baseball's protocols. These give meaning to the bits of information which lead to the evaluation of performance and outcomes.

Undoubtedly, expected or "wished for" outcomes may not result from any program simply by poor performance. Moreover, excellent performance may result in no consequential outcome because the activity so excellently executed was incapable of producing a consequential outcome. Program planning and evaluation has many facets, any one of which, if left to chance or oracular verbiage or wishfulness, may result in dilemma. Conviction based on objective evidence regarding end results of health programs is not easily achieved. Evaluation of (1) performance of activities and (2) of outcomes may be essential at the present stage of development of accident-injury prevention programs.

Public health scientists and administrators have developed many effective and convincing programs of control and prevention. Such developments portray the following steps:

(a) Recognition of the scope, magnitude, and characteristics of the disease or condition.

(b) Study of correlated factors, causative agents or [illegible]ions, etc.

(c) Study of the disease process after elimination of suspected factors and/or substitution of factors which are favorable to prevention.

(d) Development of procedures which show that they enhance prevention of the disease process or of deleterious effects therefrom.

(e) Demonstration (sometimes with numerous repetitions) that (1) selected activities and/or products result in objective evidence of desired outcomes, and (2) that the program costs (funds, personnel, time) are reasonable.

Perhaps serious consideration in light of the above should be given to the stage of development of each of the many possible activities in the accident-injury complex before including them in "programs."

These remarks have intended to raise questions. Summary of these is couched in the following interrogations:

1. What is intended to be prevented?

2. What activities are to be included in the program of prevention?

3. Can these activities be objectively evaluated? Have the means of evaluation of such activities been specified in the program plans?

4. What are the anticipated outcomes of the program of prevention? Are these outcomes subject to objective evaluation and the means for such evaluation specified in the program plans?

If answers to these questions are clearly set forth, the techniques for evaluation of the specified activities and program outcomes are included in the program plans. Judgment regarding merits of specific evaluation techniques should be made in regard to the activities and expected outcomes against which they are to be applied.

ACCIDENT PREVENTION: AN OVERVIEW OF THE FIELD

W. G. Johnson*

Introduction

The National Safety Council hails this meeting as a significant landmark in the growth of public health interest in accident prevention. We commend and congratulate the University of Michigan School of Public Health and the United States Public Health Service for calling this group together. We anticipate that the meeting will be highly productive in terms of training accident prevention specialists and integrating accident prevention into the many fields of public health. The announcement of the meeting sounded a note of optimism for the future of safety work.

Whenever I want to contemplate my persuasive powers with humility I remind myself of a speech on accident statistics given at a meeting of the American Public Health Association before World War II. Immediately after the speech's modicum of polite applause, we all joined hands and went out to inspect a sewage treatment plant with the greatest enthusiasm!

The last twelve years, particularly, have seen a continual growth in public health and medical interest in accident prevention. We shall see in the next few minutes many indications that the role of public health people and medical groups in accident prevention needs considerable exploration, experimentation, development and definition. However, we shall see many areas warranting immediate action and see many interesting and probably productive frontiers.

The task of presenting "an overview of the field of accident prevention" is not just a challenging task—it is a well nigh impossible task. The modern architect says, "Form Follows Function." This is also true of safety work. It is inextricably entwined in the million and one things we do. The bulk of successful accident prevention work has been initiated and carried out by those responsible for a given activity. Vocabularies, professional knowledge, purpose, and methods in all aspects of activity vary widely. It appears that we have not one, but hundreds of safety movements. This is as it should be, but it poses problems for the synthesizer.

The Accident Problem[1]

93,000 dead.

9,400,000 permanent or temporary total disabilities.

36,000,000 medically attended or temporary partial disabilities.

Economic loss - $13,600,000,000.

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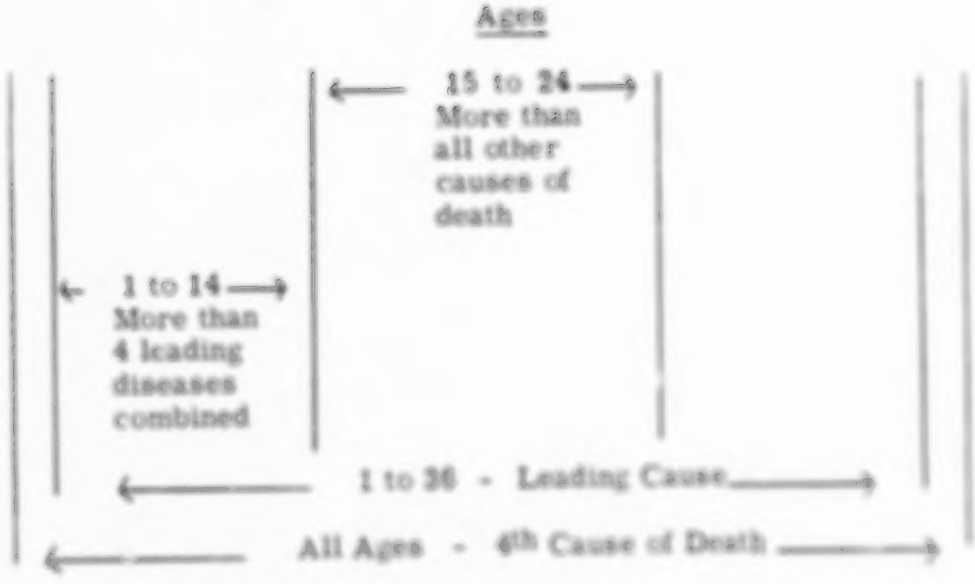
1 Highlights selected from the 1961 and prior editions of Accident Facts, National Safety Council. Definitions and footnotes, plus considerable additional data will be found in Accident Facts. Other highlights in Appendix I.



Accidents are the second most important cause of lost working years. Were No. 1 in 1945 when the American Medical Association studied the role of accidents, but the accidental death rate has come down in the interim.

Accidental Death Trends and Classes

The 1960 death rate was 52 per 100,000 population. The rate was 100 in 1906 and in the 80's and 90's before World War I.

Non-motor-vehicle deaths numbered 54,800 in 1960—essentially the same total as in 1900 (allowing for changes in classification). However, population increased from 76 million to 180 million. The age-adjusted death rate for non-motor-vehicle deaths dropped 60 per cent in the 60 year period.

The increase in motor vehicle accidents is the other predominant feature of this century's accident experience. In 1960, 87 million licensed drivers in 74 million cars traveled 720 billion vehicle miles. There were 38,200 deaths.

Classes of Activity. Beginning in 1928, death estimates for the four major classes of activity are available. In the last 32 years the non-motor-vehicle rates (age-adjusted) all show substantial decreases. Even the motor vehicle rate on an age-adjusted population basis dropped slightly.

	1960 Deaths	Population Death Rate	Changes in Age-Adjusted Rates 1928 to 1960	1950 to 1960
Motor Vehicle	38,200	21.2	- 8%	- 4%
Public	16,500	9.2	-66%	-19%
Home	27,300	15.2	-68%	-29%
Occupational	12,800	7.1	-51%	-20%

In gross, overall rates, there is no way of isolating the past influence of such factors as improved medical treatment or such "non-safety" factors as a switch-house trend which reduces stairway falls. However, as we shall see a little later, producing "better" homes may have a close, functional relationship with producing safer homes.

Exposure Rates by Class of Activity. The accident problem is really many problems--each arising out of an activity. Consequently, progress can be more accurately evaluated by comparing accidents with exposure to the activity.

Occupational.

Death rates per 100,000 workers were:

	All Employment	Non-Agricultural
1935	39	37
1950	27	23
1960	22	18
25 year change	-44%	-32%
10 year change	-19%	-22%

Some trends in standard occupational injury rates are:

Manufacturing (Bureau of Labor Statistics) 1928-1960	-42%
National Safety Council members (all industries) 1928-1960	-73%
National Safety Council members (steel) 1926-1960	-90%

Motor Vehicle. Because of the unique exposure elements in this activity, accident rates per 10,000 cars (for cities) and per 100 million vehicle-miles of travel (for states) have been standard measurements.

The trend of the U.S. death rate per 100 million miles can be highlighted as follows:

1928 - 16.2		
1940 - 11.4	Down 30% in 12 years	
1946 - 9.6	Down 16% in 6 years	
1960 - 5.3	Down 46% in 14 years	

A more accurate measure of motor vehicle exposure[2] has been used to evaluate situations of great change in travel (e.g., during World War II and in post-War Florida). This method, briefly, reflects changes in exposure to pedestrian, two-vehicle and other accidents separately for urban and rural areas and measured by changes in travel, plus population (for pedestrians), and changes in travel-squared (for two-vehicle collisions). On a relatively constant road mileage, possibilities for collision multiply geometrically

2. Alvin D. Bailey, "The Measurement of Exposure to Motor Vehicle Accidents," Traffic Engineering, March 1959.

as more cars pass near more cars. The method is currently being evaluated by the Traffic Conference of the National Safety Council, and it now appears that a research program will be recommended to develop a standard measure of performance which will reflect these and other factors of exposure.

This type of measurement on an index basis for the ten years, 1949-1959, when travel increased 65 per cent shows death rate changes as follows:

1949 - 100 1959 - 58

Since travel is expected to increase by two-thirds in 15 years, the implications for controls and prevention expenditures will be seen in the following indices of exposure to two-vehicle accidents:

1946 - 1 1960 - 4 1975 - 12

For this exposure measurement, the building of expensive, divided, limited-access highways is a program of special importance.

When we consider that non-fatal accidents account for about 95 per cent of the economic losses from motor vehicle accidents, and exposure factors increase most for the two-vehicle collisions which predominate in the non-fatal category, the implications--economic, disabling, and medical care--warrant most serious concern, greatly expanded prevention effort, and stronger, more effective controls.

Public Accidents. Railroads and scheduled air carriers have historically shown substantial accident rate reductions on an exposure basis.

Exposures for other categories of public and recreational activity are more difficult to determine. Some indicative figures are:

General Civil Aviation - 1950 to 1960

Planes	92,000	110,000
Plane-hours (000)	9,650	13,000
Deaths	1,087	1,229

Boats - 8 million in 1961, up 5 1/2 million from 1947. Drownings - 1,000 in 1950 and 1,050 in 1960.

Drownings - (excluding Boats) - 4,300 in 1960, up 550 from 1950. Indicative of exposure growth--a third of a million pools in 1961, versus 10,800 in 1948.

Guns - 1961--20 million use sporting firearms (no trend from this source). 1,050 deaths in 1960, down 100 in 10 years.

Thus far we have referred only to deaths, simply because national trend measurements for non-fatals have not been available. The non-fatal injury proportions by class of activity vary sharply from the death distribution. Conspicuous are the large home injury totals:

	Deaths	Permanent and Temporary Total Disability	Temporary Partials and Medical Cases
Motor Vehicle	38, 201	1, 400, 000	3, 000, 000
Work	13, 800	1, 950, 000	6, 300, 000
Home	27, 500	4, 100, 000	15, 000, 000
Public	16, 500	2, 050, 000	11, 400, 000

In summary of the problem —

- Substantial progress has been made in safety
- Nevertheless—Accidents are the nation's No. 1 life-saving challenge.
- Increased exposures and new activities require —
  - Increased size of control work
  - Applications to activities not showing progress
  - Improved techniques—especially in areas not responsive to legal or executive controls.

Common Histories in Accident Prevention

The history of safety is sufficiently long and the subject matter so diverse as to be proper for a year's study, rather than a single paper. To try to give an overview and contribute to understanding of the common elements in diverse fields, a selection of historical developments can be used to illustrate some common processes in accident prevention.

Steps frequently identifiable are:

1. Accident (a)

   May be a disaster

   Develop awareness - humane and economic

2. Investigation - very often a case, frequently a group of cases, rarely a scientific study.

3. Remedy

   Draws on engineering, management, medicine, other sciences (and arts!)

   Develops practice, standard, regulation

6. Control

Executive

Regulatory

Educational

Personal influence, example

Mass education

Moral or economic impetus

Training

Custom

In Appendix III we present in a highly simplified form some universal incidents categorized to illustrate some common histories.

Unfortunately, examples of regulatory control are inherently dramatic, more complete, and therefore, tabulatable. Executive controls start with an instance and gradually become common, but are more difficult to tabulate.

Common elements in safety practices in divergent fields can also be seen in a very useful concept of accident causation, developed by the National Safety Council, and improved and published in Uniform Definitions of Home Accidents.[3] The diagram illustrates control points, and is especially applicable to simple, structured situations, such as home and occupational accidents, less easy to apply to more complex social situations encountered in public and traffic.

The diagram shows the relative roles of personal background (training, experience, judgment); environmental background (structure, equipment); changes (in behavior or agency of injury); temporary factors (personal or environmental); chance-taking; supervision and other controls; and injury-prevention measures. It has proven to be a valuable concept in orderly study of causes and remedies.

You have, perhaps, noted I use the term "safety" frequently in a paper titled "accident prevention." There have been many debates as to whether "safety" or "accident prevention" is the better term, and each term has its merits. It is possible, however, to see many situations in which "safety" has been the goal of the responsible person's advance planning, and "accident prevention" has been a construction, but after-the-fact concern of the external agency. I use the word "safety" more often than "accident prevention" just as you use the word "health" more often than "disease prevention", and probably for many of the same reasons.

In the sense of advance planning, the Safe Way has been crystallized in ten elements which help to unify the many fields of activity and, also important, help improve the activity itself. Appendix IV explains the 10 steps as applied in a variety of fields.

3. Public Health Service, U.S. Department of Health, Education, and Welfare.

THE RIGHT WAY

IS

THE SAFE WAY

1. DEFINE YOUR OBJECTIVE
2. IDENTIFY HAZARDS
3. PREPARE A SOUND PLAN
4. FIX RESPONSIBILITIES
5. SEEK GOOD FACILITIES
6. USE PROPER EQUIPMENT
7. BUILD KNOWLEDGE AND SKILL
8. SUPERVISE PERFORMANCE
9. LEARN FROM EXPERIENCE
10. EVALUATE PROGRESS

The Safe Way clearly shows our dependence on responsible people who reduce the frequency and severity of accidents in the activities they supervise.

As one indication of the constructive potential of a unifying, common methodology, we now repeatedly see each developing field of safety discover for itself the need for public support for officials in such matters as providing facilities. The goal of having safe facilities might be more quickly attained if we recognized the common factors in all safety programs.

From the Safe Way we see that the challenge posed for the accident prevention specialist is to familiarize and sensitize himself to a fantastic array of human activities—"What was the person trying to do?" —and then design remedies and controls which will, wherever possible, enhance the activity—"How can the person do it better and more safely?"

We have heard statements that accidents are "epidemic." Your term "endemic" may be more meaningful—that is, "within the population"—more precisely, within the activities of the population.

Accident Statistics

This aspect of safety work is broad enough for many hours of review. Despite a suggestion from a conferee, I concluded we could not do justice to the challenges of the

data already available to us. However, I have appended some highlights from current data. (Appendix B)

Here we can just refer to three references which will show you many patterns of accident occurrence which are at least provocative and, we believe, also promising for study and preventive efforts. The three references are:

1. Accident Facts, National Safety Council, 92 pages of data from a very wide variety of sources, a selection of most frequently used data.

2. Accident Injury Statistics, U.S. Public Health Service, 32 pages of charts, tables and text dealing with age, sex, type and place of accident. Excellent source of data on non-fatal type injuries, some of it previously unpublished.

3. Accident Prevention for Physicians and Public Health Workers. This new text is especially valuable because significant data are cast in categories likely to be responsive to medical and health approaches and resources.

A summary of four general aspects of accident data collection is valuable here:

1. Classification by class of activity has been found to be more fundamental for control than type of accident. The type becomes more significant after we narrow the field of activity. Thus, the Council's All Accidental Death Summary has been sought from state and city health departments.

   We now have monthly reports from 48 states and the District of Columbia, plus quarterly reports from one state. (We also get monthly reports from 26 counties.) The goal is all states and counties (or cities) over 50,000 population. (Appendix H in the Summary. [4])

2. Classification by place of accident has been most meaningful and will continue so. But, classification by place of residence is valuable to guide public education. Public health authorities can help us gain the understanding of others who feel we "give them" some deaths which are not "theirs" when we refer to National Vital Statistics Division rates by place of residence. Note that three-fourths of the fatalities in motor vehicle accidents happen in rural areas, but two-thirds of the victims live in urban areas.

3. Non-fatal injury data is woefully incomplete, especially for home and public accidents. Medical and health resources for compilation and study must be developed and used.

Home Safety

Prior to the 1940's we can safely point to a lack of historical examples of active home safety work. In terms of our "common histories" —

Accidents - lack of awareness

Investigation - lack of people, money, skills

4. Traffic Safety Memo 72, National Safety Council, gives definitions and instructions. Copy on request.

Remedy - no voluntary or other structure for development

Controls - executive, regulatory and educational channels weak

Since then developments have been more rapid and encouraging.

1948 - 23 organizations form Home Conference, National Safety Council

1949 - National Safety Council issues formal "Invitation to Health Departments."

The Home Conference then jointly sponsored or stimulated:

1949 - Home accident session, American Public Health Association

1950 - Child safety meeting, American Academy of Pediatrics

1952 - Child safety exhibit, American Medical Association

- First Conference on Prevention of Home Accidents, University of Michigan School of Public Health

- First Poison Control Center, Chicago

1953 - Home Safety Inventory to measure local programs

1956 - Second Conference on Prevention of Home Accidents, University of Michigan School of Public Health.

Two other developments of major significance were:

1. Kellogg grants for state and local health department projects.

2. Increasing U. S. Public Health Service interest and finance for studies and pilot projects.

Standards for structures have contributed much:

National Electrical Code and Building Exits Code, National Fire Protection Association

Model Building Codes, National Bureau of Fire Underwriters and Building Officials Conference

Model Housing Ordinance, American Public Health Association

Material and design standards, American Standards Association, American Institute of Architects, and American Society for the Testing of Materials.

Wider use of codes and stricter supervision can accomplish a great deal--and here we see the need for organized public support, especially for officials' programs.

The improvement of community fire services, particularly inspection and prevention activities, have lowered our fire rates. The death rate from burns dropped from 9.7 in 1913 to 4.1 in 1960, but almost none of the reduction was in the last 10 years. Educational efforts must supplement enforcement and fire protection services.

The gas poisoning death rate has dropped 50 per cent in 10 years. The change to natural gas, legal requirements for venting, and equipment standards of utilities appear to be major factors.

Poison control centers numbered 446 on March 1. The death rate has been static, but we face constantly increasing quantities and kinds of toxic agents. Although public health is primarily concerned with prevention, the poison control centers seem to have concentrated primarily on diagnosis and treatment, so the need to improve and expand educational efforts is acute.

The aged have special and acute problems. Increase in the numbers of elderly has been widely noted. The White House Conference on Aging highlighted the rising costs of accidents to the elderly. The need for safe housing, both public and private for our aged population will also become more acute with each passing year. The role which public health departments have assumed in the area of nursing homes is a most logical contribution in meeting this need.

Increased attention is needed in the areas of safety education for employees as well as patients; and in the construction and maintenance of as safe an environment as possible.

The problem of aging drivers on increasingly congested streets will become more and more serious. The medical concern with periodic examinations, consultation with patients, and adequate standards are obvious. Sometimes not so obvious to medical groups is the growing dependence of these people on their cars.

Traffic Accidents

Fundamental to understanding of traffic safety is the Action Program of the President's Committee for Traffic Safety. The nine pamphlets summarizing the consensus of traffic experts contain 202 pages on:

Laws and Ordinances
Traffic Accident Records
Engineering
Police Traffic Supervision
Traffic Courts
Education (School)
Public Information
Motor Vehicle Administration (driver licensing and vehicle inspection)
Organized Citizen Support

Two additional pamphlets on Research and Medical Services are scheduled for 1962.

The degree of application of this program is measured by the Traffic Inventory conducted annually by the Council. Last year 30 states and 1278 cities completed detailed questionnaires which we analyzed. We then presented our recommendations directly, or in smaller cities, through state and metropolitan agencies.

To illustrate the elements of the Action Program and at the same time show the tremendous size of the present effort, let me cite some specific activity data collected in the Traffic Inventory.

1. Accident records - 869 cities over 10,000 population, 90% of those reporting, maintain accident spot maps. These can be used to identify locations, through streets, and neighborhoods which warrant further study as the basis for design of engineering, enforcement, and educational treatment.

2. Traffic Engineering - Reporting cities and states had an aggregate of 189, 188 man-days spent on the study of high accident locations. Thus, we see a tremendous program in being, and of the type public health people refer to as the "epidemiological approach."

3. Police - 47 states and 1,112 cities reported an aggregate of 9,902,259 arrests for hazardous moving violations. Again we see a tremendous safety force in being, provided the activity is soundly designed to correct hazardous behavior and improve attitude.

   Forty-five states and 944 cities report that they use chemical tests for intoxication.

4. Courts - 294 courts, 21% of those reporting, operate violator schools.

5. Schools - 2,980,586 high school students, 39% of those eligible, receive the recommended driver education course.

The American Automobile Association and Insurance Institute for Highway Safety also conduct inventories on pedestrian protection and driver education respectively.

In recent years three special sections of the Council's Inventory have been used to collect new data.

1. In 1957, 23 state summaries of research completed or in progress.

2. In 1958, 883 cities reported on facilities for transportation of injured persons.

3. In 1960, 43 states reported on medical services in traffic safety.

The more controllable commercial vehicle aspect of traffic safety has received considerable attention. The Council and many trade associations have had productive programs. Federal government has done considerable work on its own vehicles and drivers, but generally state and local government has lagged. When we remember the many state and local "traffic safety programs," this is another illustration of our propensity for helping the "other guy" prevent accidents! This is an area deserving attention of public health officials as members of the government family.

Increasing attention to research needs can be highlighted in three ways.

1. The crash injury studies which led to seat belts and vehicle improvements are classic.

2. Some important research conferences and analyses in recent years were:

   1950 - Occupational Research (President's Conference on Occupational Safety)

   1956 - Research in Safety Education (Center for Safety Education, N. Y. U. and School and College Conference, N. S. C.)

   1958 - Williamsburg Conference (President's Committee for Traffic Safety)

   1958 - Skid Prevention Conference (University of Virginia)

   1959 - Farm Safety Research (Farm Division of N. S. C., U. S. Department of Agriculture, the Farm Foundation)

   1961 - Driving Simulation (Automotive Safety Foundation, Bureau of Public Roads, and Public Health Service)

   1961 - Alcohol and Road Traffic (U. S. Public Health Service)

3. U. S. Public Health Service funds for research (all safety fields) increased from $54,022 in 1958 to $2,391,302 in 1961.

State and Community Organizations

In 1955 the National Safety Council published its 36-page manual, Community Safety Organization, Principles, Policies, Programs. The major headings are:

Need for Organized Action
Kind of Action Needed
Organization Objectives
Operating Policies
Program Goals
Organization Plan
Adequate Resources
Appraisal of Results
Leadership
Finance
Public Education Policies
Traffic Policies
Occupational Safety
Home Safety
School Safety
Farm Safety
Motor Transportation Safety
Public Safety (Non-Motor-Vehicle)

This is recommended reading--because there's considerable misunderstanding and myth in the area of community safety organization. The principles enunciated, many drawn from related social sciences, have stood up in six years of intensive application.

In 1958 the Council initiated formal, detailed appraisal of the state and local safety organizations closely associated with the Council—a badly needed service, and one which has proved quite valuable. Of the more than 100 organizations thus far appraised 81 have been accredited; these "cover" 81 per cent of the U. S. population (but "coverage" is weak, principally due to lack of finance).

36 organizations appraised in 1958, and twice since submitting annual reports, show amazing improvements in each major facet.

At the time of the 1958 appraisal, 13 of the 36 were seriously deficient in leadership—only one of these was deficient at the time of the 1961 appraisal.

Eight councils had weaknesses in organization structure in 1958—all were satisfactory in 1961.

Seventeen councils were seriously under-financed in 1958—nine remained so in 1961, but almost all had improved.

Nine councils had unsatisfactory relationships with official agencies in 1958—none was rated unsatisfactory in 1961.

Twelve councils were rated as unsatisfactory in the amount of staff and facilities in 1958—four were still deficient in this respect in 1961.

Ten councils were rated unsatisfactory in program in 1958—only one was so rated in 1961.

In summary, among the 36 councils, 72 major deficiencies were found in 1958—in 1961, only 15 such deficiencies were found.

Two devices, originally developed for national traffic safety agencies, and used in this appraisal process, deserve your study:

Needs Charts

Services Charts (next 2 pages)

We commend them for public health adaptation and use, and will give some suggestions as to application. Thus far, they have provided the only orderly, agreed-upon method for sorting out complex public safety activities.

Some Frontiers

Let us turn our attention to some of the frontiers in accident prevention which present themselves to public health workers.

During 1960 the Association of State and Territorial Health Officers assisted us to develop a questionnaire on medical services in traffic safety which was incorporated with the other ten questionnaires in the Annual Inventory of Traffic Safety Activities. This questionnaire was completed by 45 states. A summary report has been prepared and has been turned over to the Association of State and Territorial Health Officers for analysis and preparation of recommendations.

CITY'S TRAFFIC SAFETY PROGRAM

NEEDS

BASED ON ACTION PROGRAM

| OBJECTIVES | RESPONSIBLE AGENCY | ACTIVITIES/TASKS | GOALS | | |

SERVICES
to COMMUNITY GROUPS
TYPES OF SERVICES PROVIDED

To no one's surprise, because there had previously been a few limited inquiries, the role of medical services in state traffic safety programs was found to be extremely limited at this time, and there was no consistency in activities from state to state.

To test the survey findings in the analysis format which I have already described as one of our primary tools, we have attached a service chart as Appendix V. You will immediately find that we had to redesign the service chart to show the services which medical agencies provide to other state officials—a service role most often filled by the national traffic safety agencies. However, the public health officer has few, if any, "line" functions in present programs. Rather, he has the role of medical consultant, advisor, or assistant to the state officials who carry out the primary state traffic control functions.

In the realm of public education, the services to citizen groups by state health officers have been cast in the same service chart format usually used for other safety groups.

The first and primary conclusion from the service chart is that the health and medical agencies have a very limited role in present day programs. Only a few kinds of services are rendered to only a few other agencies.

The second conclusion is that even on the services analyzed, only a minority, and sometimes an extremely small minority, are active.

When you refer to the service chart, in the upper-right hand corner you will find that the chief health officer is a member of the official state traffic safety coordinating committee in only 17 instances and the question drew 23 "no" replies. (We recognize that the official coordinating committee is non-existent or inactive in some states.)

We know that most state health officers give assistance to traffic accident record bureaus by helping to reconcile traffic and death certificate reports of fatalities. This is, however, only a routine chore. In only six instances was the chief health officer or a member of his staff viewed as a statistical consultant to the records bureau. Because many state traffic accident record bureaus are not professionally staffed, the role of statistical consultant can be quite important. The questionnaire did not ask the role of the health officer as statistical consultant to other programs. However, this role is often very important and valuable.

We find that some chief health officers give important services to the police—in ten instances they provide standards for chemical tests, in six they train police in chemical tests, and in seven instances test the equipment. In eight instances the health laboratory tests specimens. In eight other instances other medical groups provided standards and recommendations on chemical test procedure. Note that 27 states had no established or organized contact with medical agencies for the important area of chemical testing.

In driver licensing, we explored several roles of health and medical groups. The state health officer was consultant to the license authority in twelve cases, other medical groups had this role in nine states, but eight of the states said that "personal physicians" provided this service, and I think this has some implications for the quality and value of the service. However note that only three chief health officers said that they had standards for licensing. Thirteen had a policy on epileptics. The chief health officer was consultant to the license authority on individual cases in 14 instances.

Only three states reported that the chief health officer provided a follow-up on mental patients; however, this was done by other official agencies in 11 states.

Fifteen state health officers said that they had records of certain conditions which may have a relationship to motor vehicle accidents. However, when asked about use of these by license authorities many of the health officers said, "Never been asked." This is indicative of the liaison need which we are all recognizing. In the matter of medications, increasingly recognized as a problem in driving, only five state health officers had the role of consultant, and in only seven other instances was an organized medical group providing this service.

Most of the state health officers issued news releases which contained some information on motor vehicle accidents and 29 said that they participated in public education. Only eight states reported any activity to improve emergency care, and I shall return to this important subject in discussing community activities.

Now let us look at the left hand column of the service chart, the one concerned with research and fact finding. Only three states reported research (over and above assistance in the Cornell Crash Injury project) and only three states reported special studies.

We are very hopeful that the Association of State and Territorial Health Officers will present the findings to their group in the form of a general recommendation that every state health officer concern himself with his role and his services in the important matter of traffic safety. Judging from the interest of many leading health officers, I have no doubt that a similar questionnaire, and presumably an improved questionnaire, will show great progress in the next few years.

I should add that we see more and more instances of recognition of the need for medical services on the part of the other officials in state government.

Now let us turn our attention to the role of the local health officer in a community safety program, and not limit it to traffic accidents. Here we have little or no data on actual activities. Perhaps the next few years can see an inventory questionnaire go out to the local health departments. However such case histories as we have, and our knowledge of community needs and organization, provide a considerable basis for identifying the major services which local health departments ought to be providing.

Again, we have put the services in a service chart form (Appendix VI.) comparable to the ones we use currently in community organization analysis, but we have added some groups to be served, particularly from a public health viewpoint.

The service chart shows:

Research and Fact Finding

The public health department is one primary source of current accident statistics. Many special studies are needed, in addition to the routine tabulations. Naturally, we assume that the health department is preparing an all accidental death summary.

It would be impossible to here discuss research needs in detail. Certainly we hope to have from the medical professions some guide lines on such basic factors as attention, risk evaluation and chance taking, relations with general health, and constructive attitude development. These broad research areas underlie our problems in a wide variety of

specific activities. This type of basic research could be more important than small projects involving very limited specific activities.

Standards and Recommendations

Housing, nursing home and sanitary codes are common health department standards for the community.

The recommendation of seat belts is a newer example.

Training

The participation of health departments in training of police officers to administer chemical tests and health department involvement in the violator schools operated by many courts are examples of specific practical training activities.

(The intra-mural training of department personnel is important, but is not shown as an external service.)

Technical Assistance

We indicate that the health department may very well have a primary role as technical consultant to the official family on matters of employee, vehicle, and off-the-job safety applying to the operations of government itself.

Certainly the health officer should have the role of technical consultant to the individual departments of government with respect to medical problems.

Two particularly important illustrations of the consultant's role within the official family have been noted on the service chart:

1. The police department record bureau is seldom staffed with professional statisticians. Consequently, the professional staff of the health officer can give a great deal of assistance in techniques of properly handling, summarizing, and interpreting traffic accident data.

2. We estimate that between 3,500 and 4,000 fatalities occur annually in institutions. When we consider the tremendous number of people hospitalized, particularly in mental hospitals, and the large prison population, we can readily see that there are many, many opportunities for constructive accident prevention work. Certainly the health officer is in a key spot to assist government to do a good job in its own operations, in this instance, institutional care.

Program Aids

Public health publications and releases should certainly include safety, and safety motion pictures should be included in health department film libraries available to the public.

Coordination

We have noted in appropriate places the health officer's obligation to participate in local coordination devices of one kind or another. This means that he should take his

proper place in the community safety council and within the official governmental coordinating committee which is urged for every city and every state. Other opportunities for coordination on a voluntary basis include work with surgeons and other medical groups.

In small rural counties, there is a definite opportunity to help provide staff service for citizen organizations. Many of these have been organized around farm safety activities, and health officers will find that the county agricultural extension agent in many cases is already helping out. However, staff service remains a problem in the volunteer safety councils.

Schools

Health officers normally give a wide variety of services to the schools. Certainly these services should include the subject of accident prevention.

Emergency Care

The whole topic of emergency care, especially transportation of injured persons, is deserving of a great deal more attention from the health departments throughout the country.

The National Safety Council, the American College of Surgeons, and the American Association for the Surgery of Trauma have a Joint Action Program. In this connection a survey of 865 cities was made in 1959. From these findings detailed recommendations for improvement of transportation of the injured were prepared and jointly agreed to by the three agencies.

The field application of this program is lagging. The National Safety Council field staff was already fully committed to the traffic inventory and other operations. The American College of Surgeons has only a small field staff to work on purely surgical programs.

Consequently, the field of transportation of injured persons is a wonderful opportunity, beginning with the U. S. Public Health Service and extending down to state and local health departments, to render full and complete services to community groups. We have a "community action" kit.

This subject should have priority attention from every health officer.

Medical Groups

The new book "The Role of Physicians and Public Health Workers in Accident Prevention" provides many recommendations as to how the role of medical groups can be developed and expanded. Public health people can use these recommendations to stimulate additional activities among all manner of medical groups in their communities.

Citizen Groups

The sanitarians and nurses, because of the nature of their work and training, have a unique possibility to give technical assistance to a wide variety of citizen groups as they go about their normal duties. Since many of the sanitarians and nurses are getting into

places and talking with groups not reached by other members of the official family. It seems of tremendous importance that they be fully utilized for accident prevention.

Citizen groups need help in the area of research and fact finding, first as to the local situation in accidents and accident prevention, and second, need the benefit of research in other places as to what citizen groups projects have been most effective.

The local health department can help provide, usually through the local safety council, a systematic means of exchanging information on projects among the various citizen groups—periodic conferences and newsletters are examples.

The National Safety Council's experience with citizen group seminars has been excellent. The volunteer safety chairmen of a wide variety of civic groups—labor, women, church, business, etc.—welcome opportunities to participate in good training. In some instances these have been so successful that attendance had to be rationed!

The citizen groups also need to have available professional personnel who can sit down with their committees and help the committees plan programs which are well adapted to their needs and likely to attain their objective.

The civic groups are always in need of materials and program aids of various kinds to help them carry out their programs.

Business

Many health departments already give technical assistance in problems of occupational health. Some have had programs intended to improve medical services in smaller plants. All of these can be expanded to include the broader matter of off-the-job safety. Industry is increasingly realizing that the cost of off-the-job accidents exceeds the cost of occupational accidents. Industry can use guidance as to what kinds of topics need emphasis and how off-the-job safety messages can most effectively be brought to the work force.

Officials Need Public Support

We well know that constructive official programs require public support. Illustrative of our analysis of traffic needs I attach an analysis chart on which I've circled the items applicable to public health.

The Role of Schools of Public Health

Equip your students to give the improved public health services needed. Conduct research.

The last several decades have seen a tremendous growth in college and university safety activities. In exploring the role of a particular school of public health in a particular university, I would suggest that you carefully investigate the current status of several kinds of programs:

CITY'S TRAFFIC SAFETY PROGRAM

NEEDS

BASED ON ACTION PROGRAMS

OBJECTIVES	RESPONSIBLE AGENCIES	AUTHORIZATION	MONEY	FACILITIES				ORGANIZATION	POLICIES & PROCEDURES	OPERATIONS
				EQUIPMENT	PERSONNEL					
					NUMBER	TRAINING	QUALIFICATIONS			
UNIFORM LAWS	LEGISLATURE AND CITY COUNCILS									
OFFICIAL COORDINATION	GOVERNORS, MAYORS, COUNTY OFFICIALS, CITIZEN LEADERS									
ADEQUATE ACCIDENT REPORTS USED TO GUIDE PROGRAMS	OFFICIAL RECORD AGENCIES									
GOOD INSTRUCTION FOR CHILDREN AND YOUTH	SCHOOLS									
TRAFFIC SUPERVISION AND FIRM ENFORCEMENT	POLICE									
DISPENSE JUSTICE AND CREATE RESPECT FOR LAW	COURTS									
STRICT REQUIREMENTS FOR OBTAINING AND RETAINING DRIVER LICENSE PRIVILEGES	LICENSE AUTHORITIES									
INCREASED SAFETY OF EXISTING ROADS AND STREETS THROUGH ENGINEERING	STREET AND HIGHWAY DEPTS.									
CONSTRUCTION OF ADDITIONAL STREETS AND HIGHWAYS TO CARRY TRAFFIC SAFELY	STREET AND HIGHWAY DEPTS.									
VEHICLES MAINTAINED IN SAFE OPERATING CONDITION	INSPECTION AUTHORITIES									
Public Health		X	X	X	X	X	X	X	X	X

1. Campus Safety[5]
2. Safety center with interdepartmental scope[6]
3. Integration of safety engineering into engineering programs
4. Teacher preparation courses[7, 8]
5. Specialized extension and in-service short courses[8, 9]

With your foreign students study our role in accident prevention throughout the world.

The comprehensiveness of our approaches to accident prevention in all fields, our literature and our programs, are much admired and copied by the teams of foreign representatives who come to us in the international cooperation programs. Particularly our technical-literature is highly valued.

Our concern for the individual, as reflected in existing safety programs, has served to express a uniquely favorable facet of our American personality. However, as we plow ahead with new kinds of equipment and more equipment, particularly in traffic and in recreation, I'm not sure safety keeps pace with our effort in other areas.

In connection with World Health Organization safety programs, we have had occasion to note the differences in problems as compared with agricultural economies and/or those with a low standard of living. Hopefully we can help others avoid our mistakes and take advantage of our progress as they cut loose from the safeguarding customs of a more static past.

Conclusion

Government, industry, and non-official organizations must all participate in the tremendous task of helping our 180 million people help themselves to live safer lives. Many departments of government have responsibility and authority for their respective segments of the official portion of the safety program. The list is long, but here are a few examples at the Federal level:

Federal Aviation Agency
United States Coast Guard
Bureau of Mines
Interstate Commerce Commission

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5. Safety Monographs for Colleges and Universities, Nos. 1-12, Proceedings of the First through Eighth National Conference on Campus Safety, and reports of special surveys. National Safety Council, 1952-1961.
6. The College and University Safety Center, Division of College Safety Centers, Higher Education Section, National Safety Council, 1960.
7. "College Safety Education Credit Courses," Safety Education, September, 1960. Also available as reprint. National Safety Council.
8. Courses in Highway Safety and Highway Traffic. National Education Association, 1958.
9. Industrial Safety Courses in Colleges and Universities, Industrial Data Sheet 493. National Safety Council, 1960.

Public Health Service
TVA
Corps of Engineers, Civil Works
Army - Navy - Air Force
Bureau of Reclamation
Bureau of Public Roads
National Park Service
Office of Education
Department of Labor
Department of Agriculture

At any level of government, the job of defining the role of public health needs careful, painstaking analysis.

We are in deadly earnest about accident prevention. But, may I close with some lighter, but provocative, anecdotes—

A corporation officer asked me whether I could tell him why promising young people disqualified themselves for promotion after they had worked in accident prevention programs for a few years.

A personnel man said, "One thing you learn from studying mistakes is how to make bigger mistakes."

A city editor described good work when he said, "Count that day lost during which you don't catch hell for something."

If you will relate these three anecdotes and your personal safety efforts to the National Safety Council's Creed, I think you will see the nature of our difficult task—

"Safety is positive. It is doing things the right way. It is interest in the welfare of others.

"It is a contribution to good living, to good government and respect for law and order, to efficient production, and to the well-being of every individual."

APPENDIX I.

ACCIDENT HIGHLIGHTS

Falls - 18,900 deaths. Second only to motor vehicle accidents. Almost three-fourths are 65 years or older. Rates in the southeastern states are lower.

Disasters - Major public disasters since 1865 have taken about 30,000 lives—less than the motor-vehicle toll in 1960.

HOME

Falls - 12,200 deaths, 44 per cent of the home total. Eighty-six per cent, 65 or over. Injuries on stairways—study showed four-fifths were descending.

Burns - 6,100 deaths—1,400 under 5; 1,050, 75 or over, but burns are the most important type of home death in all groups, 1 to 64 years.

Suffocation - ingested object or mechanical—3,200 deaths—2,700 under 5 years.

Firearms - 1,200 deaths, over half the firearms total.
330 home deaths in the 5-14 year group.

MOTOR VEHICLE

Rural - 72 per cent of deaths

Pedestrian - Pedestrian motor vehicle deaths are less frequent than in 1928—7,750 compared to 11,400—despite a fourfold increase in vehicle miles.

Night - The night motor-vehicle accident death rate is twice the day rate.

Two-Vehicle Collisions - 39 per cent of deaths, but 86 per cent of all urban accidents and 62 per cent of all rural accidents.

Drinking - Half the fatal accidents involve drinking drivers or pedestrians according to special studies.

Speed - Reported as a major factor in 35 per cent of fatal accidents, but not necessarily high speed; 73 per cent of urban fatal accident drivers were reported at 40 m.p.h. or less.

Right-of-Way - Failure to yield is a major factor in two-vehicle collisions.

Turnpikes - Death rate one-third that of all rural roads.

Young Drivers - Under 25 years—29 per cent of all drivers in accidents. Only 18 per cent of licensed drivers. Accident index, 1.56; other drivers, .87.

Trucks and Buses - 18 per cent of vehicles in fatals, 12 per cent in all accidents.

Vehicle Conditions - 1 of 6 defective in voluntary checks, but two-fifths defective in state official inspections. Practically none reported defective in routine accident reports!

Local Residents - 79 per cent of drivers in all accidents.

Bicycles - 350 deaths in 5-14 year group.

Evanston, Illinois - Went 66,751,200 man-days without a fatality. U. S. average 1.7 million

Southeast and Mountain States - Have highest mileage death rates.

PUBLIC

Water Transport - (includes all boats) - 1,150 deaths.

Drownings (excluding boats) - 4,300 deaths: 15-24 years, rate is highest.

Firearms - 1,050 deaths; 15-24 years, rate is highest.

Falls - 3,500 deaths - 65 years and over very high.

WORK

Industry	1960 Deaths	Death Rates
Trade	1,200	9
Manufacturing	1,700	10
Service (including government)	2,800	15
Transportation and utilities	1,600	38
Agriculture	3,300	58
Construction	2,400	73
Mining, quarrying, oil and gas wells	800	123

Off-the-Job Accidents - Now eclipse work accidents in cost to many companies with low occupational injury rates. Off-the-job accidents are getting increased educational efforts by business.

Ratios - Off-job to on-job were:

Deaths	2.1 to 1
Injuries	1.15 to 1

But some companies with good safety records have 10, 20, and even 30 off-job injuries for each job injury.

APPENDIX II.

ACCIDENTAL DEATH SUMMARY for _____ Month of _____ 19__

(City or State)

	TYPE OF ACCIDENT	All Ages (A)	0-4 (B)	5-14 (C)	15-24 (D)	25-44 (E)	45-64 (F)	65-74 (G)	75 and Over (H)	Age Unknown (I)
	1. GRAND TOTAL									
WORK (except public transportation)	2. WORK TOTAL									
	3. Agriculture									
	4. Mining, Quarrying, Oil and Gas Wells									
	5. Manufacturing									
	6. Construction									
	7. Transportation									
	8. Public Utilities									
	9. Trade									
	10. Service									
	11. Other Specified Industry									
	12. Unspecified Industry									
HOME	13. HOME TOTAL									
	14. Poisonings (gas excepted)									
	15. Poisonings by Gases and Vapors									
	16. Fire, Explosion of Combustible Material									
	17. Hot Substance, Corrosive Liquid, Steam									
	18. Mechanical Suffocation									
	19. Firearms									
	20. Falls on Same Level									
	21. Falls to Different Level or Unspecified									
	22. Other Specified Home Accidents									
	23. Unspecified Home Accidents									
MOTOR-VEHICLE	24. MOTOR-VEHICLE TOTAL									
	25. Injury to Pedestrian									
	26. Collision with Other Motor Vehicle									
	27. Collision with Railroad Train									
	28. Collision with Street Car									
	29. Injury to Pedal Cyclist									
	30. Collision with Animal-drawn Vehicle or Animal									
	31. Collision with Fixed Object									
	32. Noncollision									
	33. Other and Unspecified Accident									
PUBLIC	34. PUBLIC NON-MOTOR-VEHICLE TOTAL (Priority given to items 35 to 39)									
	35. Railroad—Not with Motor Vehicle									
	36. Street Car—Not with Motor Vehicle									
	37. Other Vehicle—Not with Motor Vehicle									
	38. Water Transportation									
	39. Air Transportation									
	40. Fire, Explosion of Combustible Material									
	41. Hot Substance, Corrosive Liquid, Steam									
	42. Drowning									
	43. Firearms									
	44. Falls on Same Level									
	45. Falls to Different Level or Unspecified									
	46. Other Specified Public Accidents									
	47. Unspecified Public Accidents									
	48. Type of Accident Unknown									

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IMPORTANT! Fill in blanks on other side.

ADDITIONAL INFORMATION

1. The motor-vehicle death total may be divided into _____ traffic deaths (List Nos. E 810-25) and _____ nontraffic deaths (List Nos. E 830-35).
2. The motor-vehicle death total includes _____ persons who were in the course of gainful employment at the time of the accident.
3. Of the _____ deaths in public non-motor-vehicle transportation accidents (lines 35 to 39), _____ were persons in the course of gainful employment at the time of the accident.

Please send one copy of each Summary to the National Safety Council 425 N. Michigan Ave., Chicago 11, Illinois.

For cities this report is intended to cover all deaths that result from accidents occurring in the city. Deaths in the city that result from accidents occurring outside the city should not be included. However, deaths occurring outside the city as the result of accidents within the city should be included, if information can be obtained.

For states the report may cover all accidental deaths occurring in the state regardless of where the accident occurred. The exceptions noted above for cities are not important for states and may therefore be disregarded.

In either cities or states the information necessary to complete this report can be obtained only from the records of the Registrar of Vital Statistics. Police departments or others who can expect to get complete information on traffic accidents only will be supplied with a different form, on request to the National Safety Council. The traffic accident form provides a detailed analysis of fatal, nonfatal, and property damage accidents and their circumstances.

DEFINITIONS

(For details, refer to Public Safety Memo No. 72)

A. Work Accidents.

This classification includes all deaths arising out of and in the course of gainful employment unless injured person was a domestic servant, or was involved in a transportation accident. These transportation accident deaths of persons in the course of gainful employment are classified as Motor-Vehicle or Public Non-Motor-Vehicle, but they are also recorded in the second and third paragraphs under Additional Information, above.

B. Home Accidents.

A home accident is an accident occurring in the home, or on home premises, which results in death to an occupant, guest, trespasser or domestic servant. Accidents on home premises resulting in death to persons, other than domestic servants, who are in the course of gainful employment are not classified as home accidents.

C. Motor-Vehicle Accidents.

This classification includes all deaths coded for International List Nos. E 810 to E 825 and E 830 to E 835. The total for each group of List Numbers should be stated in the first paragraph under Additional Information, above.

D. Public Non-Motor-Vehicle Accidents.

This classification includes all deaths not described in the preceding paragraphs.

This report prepared by:

Name.....

Title and Department.....

CERTIFICATION

If this summary is not prepared by the Registrar of Vital Statistics in the Health Department, the Registrar should sign the following statement:

The Grand Total given on the first line of this Summary includes all accidental deaths (International List of Causes of Death, Sixth Revision, numbers E 800 to E 962) occurring in the specified month, which were reported to this office up to.....

(Date of tabulation)

.....

(Registrar)

Rep. 10M46109

APPENDIX III

"Common Histories"

Examples from Occupational Safety

	Machine Guarding	Cost Awareness	Mines	Handling Materials	Chemicals
1. Accidents	Machinery accidents increase with Industrial Revolution	Increasing costs. Cost inescapable by compensation acts (1911 in two states)	Mine disasters	Largest class of accident	Splash Inhalation Explosion
2. Investigation	Lack of guards responsible	Costly. Preventable by managements.	U. S. Bureau of Mines (1910)	Differs by industry	Industry itself. Public health authorities
3. Remedy	Guard	Eliminate hazards. Use better methods.	Research Standards	Mechanical equipment Personal protection Arrangement Correct methods	Gas masks Manufacturing Chemist data sheets Bureau of mines approval
4. Control	Regulation (1877 in Massachusetts) Other states	Executive responsibility. Money for corrections authorized. (1906 in U.S. Steel) Train employees Other companies	Regulation Inspection Training	Executive Better equipment Supervision Example Custom Advertising of equipment	Largely executive ICC regulations for containers Labeling act

Examples from Fire Safety

	Disasters	Equipment	Fireworks	Flammable Fabrics	Hartford Circus
1. Accidents	Binghamton Clothing Iroquois Theatre Collinwood School Triangle Shirt Waist	Baltimore	Many injuries, especially to children	Clothing fires	Tent canvas caught fire: 168 deaths.
2. Investigation	Stairways, fire escapes and exits inadequate Construction poor Panic	Non-standard hose couplings	Use of fireworks needlessly injurious	Rapid burning of special materials and synthetics	Exits blocked; also inadequate
3. Remedy	NEPA codes and reports (1911, 1916, 1918, et. seq.)	Standards	Prohibit use	NFPA code NSC Data sheets ASA standards	Fire-retardant treatment of canvas Conformance with already existing NFPA exit code
4. Control	Local Regulations Executive improvements in new construction Architects	Executives of Fire Departments	State laws Education of parents to not buy bootleg	Regulation - Flammable Fabrics Act	State and local regulations.

Examples from Transportation Safety

	Railroad Brakes	Railroad Crossings	Marine	Air Carriers	Trucks
1. Accidents	In early years, many rear-end and head-on collisions	226,000 crossings present hazards to both car owners and railroads	TITANIC sunk, April 15, 1912	Relatively rare events	Personal factors
2. Investigation	Lorenzo Coffin and others showed many accidents due to slow action of hand brakes	By railroads, with reports to Interstate Commerce Commission	Showed icebergs in shipping lanes during part of year	Extremely thorough analysis	Occur away from supervision
3. Remedy	1886-87 trials on Burlington Railroad showed efficiency of air brakes	Eliminate where warranted Signalized properly Educate drivers	Moved shipping lanes 70 miles south	Specific changes in equipment and procedure	Training Incentives, Awards, etc. Discipline
4. Control	1893 Interstate Commerce Commission Safety Appliance Act requiring air brakes	Expenditures Public and private funds Regulations Campaigns	Regulations on lifeboats, fog horns Today, radar	Executive Regulatory	Executive By I.C.C. inspection

Examples from Home Safety

	Unsafe Housing	Nursing Home Fires	Refrigerator Deaths	Plastic Bag Deaths	Power Lawn Mower Injuries
1. Accident	Building inspection of low rental units in many cities	Disasterous fires in Missouri, Mass. and other states	Comparatively large number of deaths especially to children	Comparatively large number of deaths especially to children	Reports and news releases of hundreds of such cases each mowing season
2. Investigation	Sanitarian and building inspector's reports	Investigation of catastrophic nursing home fires	Case histories	Case histories	Case histories - Georgia and Pennsylvania survey
3. Remedy	APHA Model Housing Code	Nursing home standards by states	Remove doors, etc. Doors open from within (magnet instead of lock to hold door closed)	Agreement to use educational methods on bags, through press, pamphlets, radio	Education and A.S.A. Safety Standards
4. Control	Acceptance by states and communities	State regulations	Education (NEMA) Federal Regulation re new boxes	Industrial and organization agreement on campaign plans	Cooperation by manfrs in producing safer machines

Examples from Traffic Safety

	Traffic Engineering	Pedestrian	Children	Youth	Crash Injury
1. Accidents	Clusters at locations	Congested, signalized intersections	To and from school	High rate	Injuries to occupants
2. Investigation	Physical features	Vehicle turns Pedestrians cross against lights	Young children	Inexperience Attitude	Thrown out Impact with vehicle
3. Remedy	Physical changes Signs	Walk signals Enforce pedestrian and vehicle laws	Signs Standard rules for Patrols	Training	Seat belts Door locks Steering wheels Padding Recess knobs, etc.
4. Control	Engineers and appropriations ITE Manual	Install signals Education - 1st Enforcement - 2nd	Signs Police - where necessary Patrols	Driver Education courses	Executive - manufacturers Users

Other Examples from Traffic

	Christmas Holiday	Vehicle Vision	Courts	Driver License
1. Accidents	High toll	Injury from broken glass	Involve violations of traffic laws	Frequency - traffic violations
2. Investigation	Cluster of drinking accidents last working day	Injury due to striking or from flying glass	J. P. Courts do not create respect for law	Attitude Physical fitness
3. Remedy	Eliminate drinking at office parties	Improved laminated glass, tempered glass	Warren's Book Traffic Courts	Restrictions Develop concern
4. Control	Executive - propaganda to management	Manufacturers Laws	Court reform (New Jersey)	Point system

Examples from Farm Safety

	Machinery	Equipment on Road	Farm Ponds	Corn Picker Acci-Accidents	Farm Shop
1. Accidents	Numerous	Hit by cars	Drownings	Loss of fingers, hands, arms, life	High frequency
2. Investigation	Unguarded	Night, unlighted	Ponds increasing Youngsters cannot swim	Failure to shut off power when unclogging husker rollers	Hazardous areas not properly marked
3. Remedy	Guards	Light or reflectorized standard	Opportunities to learn	Educational Campaign	Color Code
4. Control	Manufacturers' agreement	Education e.g., Lite-Farm Equipment campaign	Buses to courses Training	F. F. A. -Call on operators Farm Equipment Industry through their Nat'l Association - The Farm Equipment Institute-Financing NSC - Technical assistance	Shops painted to conform to color code Award incentives

Examples from Recreation

	Hunting	Boats	Boats	Conflicting Use	Swimming Pools
1. Accidents	Numerous	Increasing	Increasing	Swimmers and boaters collide	Young children
2. Investigation	Mistook for game	Inadequate information	Lack of knowledge	In some areas, no rules	No supervision, fell in
3. Remedy	Red or orange Be sure of what you shoot at	Register and report accidents	Train	Separate areas, control speeds and uses	Supervise Fence
4. Controls	Education	Bonner Law	Coast Guard Aux., Power Squadron, and Red Cross Courses	Lake Geneva Law and patrol	Local laws on fencing

APPENDIX IV

The RIGHT Way
IS
The SAFE Way

1. DEFINE YOUR OBJECTIVE

State clearly what you are trying to do. Seldom is an activity discontinued simply to prevent accidents. However, a careful statement of the purpose of an activity helps establish the requirements and conditions for acceptable and economical accident prevention measures. If you just want to have fun, as in a new sport, the "fun" objective, clearly stated, may show that training is better than a painful end to the sport.

2. IDENTIFY HAZARDS

Read reports, recommendations, and instructions. Talk to experienced people. Survey and inspect existing activities. Study accident experience. List hazards in order of importance.

3. PREPARE A SOUND PLAN

Develop procedures which will minimize or eliminate hazards. Calculate risks. Seek solutions which enhance the value of the activity. Minimum requirements may be contained in regulations or codes, but additional requirements will usually be necessary to prevent accidents. Provide for appropriate participation by all concerned.

4. FIX RESPONSIBILITIES

The person in charge of any activity must assume personal responsibility for preventing accidents. He has or should have competence and should so manage as to avoid accidents. He may assign sub-responsibilities or tasks. Social responsibility includes government obligations for projecting and executing adequate plans, and citizen obligations to give public support.

5. SEEK GOOD FACILITIES

Buildings, roads, parks and other facilities should be adequate to needs, engineered and improved for safety, and maintained in safe condition. Public-owned facilities are the responsibility of government, but officials need citizen support. In addition to supporting officials in their work, the citizen can choose alternative roads, park sites, etc. in such a way as to best use present facilities. Homes and work places are personal and organizational responsibilities.

6. USE PROPER EQUIPMENT

Equipment, materials, and outside services should be designed for the job, easy to use safely, and minimize injury potential. First responsibility is on the manufacturer to offer good equipment. The user must demand safe equipment and maintain it in safe condition. Personal protective equipment can prevent injury.

7. BUILD KNOWLEDGE AND SKILL

Training to build knowledge and skill is a requirement for accomplishment and enjoyment, as well as safety. Skill, carefully analyzed, will be found to embody accident prevention. Skill is both a personal goal and an example to others.

8. SUPERVISE PERFORMANCE

Provide for competent supervision and periodic inspection. Firmness in enforcing safety requirements is desirable. Effective supervision trains and builds sound attitudes, as well as stops dangerous conduct. Good supervision stimulates voluntary observance of high standards. Self-supervision may be the answer. Or, teamwork and a "buddy system" may be a form of control, especially in sports.

9. LEARN FROM EXPERIENCE

Accident investigation, as thorough as possible, is a proven way to identify hazards which could cause a recurrence of the accident, and stimulates elimination of hazards. Research, the scientific study of accident causes and remedies, is urgently needed for further improvement of accident prevention plans.

10. EVALUATE PROGRESS

Evaluation of performance, measurement of accident rates, analysis of costs of accidents and costs of accident prevention are necessary. In small or informal activities these may only be estimated, but the effort to measure accomplishment will be rewarding. Recognition, credit and awards are sound motivations for even greater accomplishment. The recognition of lack of accomplishment leads to re-evaluation of each step in accident prevention and builds improved accident control programs.

MEDICAL TRAFFIC SAFETY SERVICES AT STATE LEVEL

Rendered by Chief Health Officers unless otherwise stated.
(Numbers refer to attached notes)

OBJECTIVES	GROUPS SERVED	RESEARCH, FACT-FINDING	EXCHANGE OF INFO.	STANDARDS OR RECOM'S.	TRAINING	TECHNICAL ASSISTANCE	PROGRAM AIDS	MEASUREMENT OF PERFORMANCE	RECOGNITION OF ACHIEVEMENT	COORDINATION	
SOUND UNIFORM LAWS	Legislators			1							
OFFICIAL COORDINATION	Governors									2	
ADEQUATE ACCIDENT REPORTS USED TO GUIDE PROGRAMS	Traffic Record Bureaus					3					
GOOD INSTRUCTION FOR CHILDREN AND YOUTH	Schools			4							5
TRAFFIC SUPERVISION AND FIRM ENFORCEMENT	Police			6	7, 8	9, 10					
SWIFT AND JUST AND ONLY RESPECT FOR LAW	Courts										
STRICT REQUIREMENTS FOR OBTAINING AND RETAINING DRIVER LICENSE PRIVILEGES	License Authorities			11, 12, 13		14, 15, 16, 17					
INCREASED SAFETY OF EXISTING ROADS AND STREETS THROUGH ENGINEERING	Street and Highway Departments										
CONSTRUCTION OF ADDITIONAL STREETS AND HIGHWAYS TO CARRY TRAFFIC SAFELY	Street and Highway Departments										
VEHICLES MAINTAINED IN SAFE OPERATING CONDITION	Inspection Authorities										
PUBLIC EDUCATION	Various						18				19
EMERGENCY CARE											20
	General	21,22,23									24

NOTES TO APPENDIX V.

1. Ambulance Law? - 5 Yes, 36 No
   Of 5 Yes, 3 = inadequate

2. CHO member of Coordinating Committee?
   17 Yes, 23 No

3. (Reconciliation of fatality reports - many)
   CHO statistical consultant?
   6 Yes (excluding reconciliation)

4. CHO consultant re bus drivers?
   15 Yes, 8 Other medical, 22 No

5. "Cooperate" on driver education? - 12 Yes, 31 No

6. CHO, chemical test standards? - 10 Yes,
   Other medical - 8 Yes, 27 No

7. CHO trains testers? - 6 Yes, 39 No

8. CHO gave 1st aid training? - 4 Yes

9. CHO certify test equipment? - 7 Yes, 37 No

10. CHO labs test specimens? - 13 Yes, 32 No

11. CHO consultant? - 12 Yes
    Other medical consultant?
    9 medical groups
    8 personal physicians
    16 none

12. CHO have standards? - 3 Yes

13. CHO policy on epileptics? - 13 Yes, 31 No

14. CHO consultant on cases? - 14 Yes, 31 No

15. Follow-up on mental patients? - 3 Yes,
    Other - 13 (2 private, 11 official), 29 No

16. Record of condition - 15

17. CHO consultant on medications? - 5 Yes
    Other consultant on medications - 7 Yes, 31 No

18. News releases? - 41 Yes, 3 No

19. Participate in public education? - 29 Yes, 16 No

20. Any activity (to improve emergency care)? - 8 Yes,
    36 No

21. Cornell Research - 6
    Other research - 3
    None - 38

22. Studies - 3

23. General tabulations - 8

24. Other activities - 25 departments

PUBLIC HEALTH SERVICES
TO COMMUNITY GROUPS

APPENDIX VI.

GROUPS SERVED	RESEARCH FACT-FINDING	EXCHANGE INFORMATION	STANDARDS OR RECOMMENDATIONS	TRAINING	TECHNICAL ASSISTANCE	PROGRAM AIDS	MEASUREMENT OF PERFORMANCE	RECOGNITION OF ACHIEVEMENT	COORDINATION
GENERAL	Current Statistics, Research and Studies		Housing, Nursing Home, & Sanitary Codes. Seat Belts				Code Enforcement		Participate
PUBLIC OFFICIALS (General)					Employee, Vehicle, & Off-the-Job				Participate
SCHOOLS			X		X	X			
POLICE				Chemical Tests	X Record Bureaus				
COURTS				Violator Schools	X				
FIRE					X				
BUILDINGS					X				
INSTITUTIONS		Poison Control Centers			X 3500-4000 Dead				
RECREATIONAL					X				
EMERGENCY CARE	X	X	X	X	X		X	X	X-with Surgeons
MEDICAL GROUPS			"Role in Accident Prevention"			Pediatricians' Leaflets			Participate
CITIZEN GROUPS (General)	X	X	X	X	Sanitarians & Nurses X	X			
MEDIA					X	Releases			
BUSINESS					Occ. Health, Off-the-Job, Small Plants				

REVIEW OF EXISTING ACCIDENT PREVENTION PROGRAMS IN OFFICIAL HEALTH AGENCIES

Berwyn F. Mattison, M. D., M. P. H. **

INTRODUCTION

The material included in this survey report comes primarily from state and territorial departments of health. Obviously there is a glaring omission, i. e., detailed information about the many accident prevention programs in local departments of health. The reason for this gap in our information is probably equally obvious: a survey of the 1, 561 units rendering local health service, together with an analysis of their widely varied and frequently non-exclusive use of personnel for accident control did not seem feasible at this time.

The present study, therefore, is based on returns from 51 states and territories out of a total of 53. In some instances at least we know that the pattern followed by larger local departments of health follows closely the pattern established by their particular state agency. In any event we hope that the information secured from so nearly complete reporting of state programs will furnish us a sound general impression of what is going on in official health agencies in this field throughout the country.

The material to be covered will include a sketchy review of what is being done, who is doing it and how state health department personnel is organized to carry out the program. I should like to express my appreciation to all of the state and territorial health officers whose prompt and complete replies have made this survey a truly comprehensive sampling of accident control activities in their jurisdictions. And I offer my apologies to those health officers of local departments where particular emphasis has been placed on accident control for our inability to include a review of their services at this time.

PROGRAM EMPHASIS

Perhaps the best indication that something more is being done about accident prevention by the official health agencies than was being done 20 years ago is found in a listing of state health department organizational units. The Directory of State and Territorial Health Authorities published by the U. S. Department of Health, Education, and Welfare for 1961 includes a specific reference to accident control under 31 of the 51 reporting agencies; whereas in 1950 a similar Directory published by the Federal Security Agency made mention of accident control only twice out of 53 reporting departments; and ten years before that the "Directory of State and Insular Health Authorities" published by the Public Health Service made no mention whatsoever of accident control activities on the part of the 54 agencies reporting.

As to what accident control activities actually make up the programs in different states, some indication may be secured from a perusal of Table 1 (see page 74). It will be seen that most states reported a very considerable predominance of major interest in the field of home safety. This is quite understandable in view of the fact that most of them started out their concern and participation in accident control through home safety programs.

* A National Survey of State Health Department Programs, conducted and compiled by The American Public Health Association.

**Executive Director, American Public Health Association, New York, New York.

It is very encouraging to note the number of states having an intermediate or minor concern in the field of vehicular safety and recreational safety. This doubtless is an indication of current trends. It is also of more than passing interest to note that in both of the latter fields (vehicular and recreational safety) there is indication of activity in the service field as well as the epidemiologic study field. It would appear that both from the educational standpoint and participation in an operational program like the examination of automobile operators, the departments of health are beginning to play a significant role.

Table 1

Accident Control Program Emphasis Reported by 48 State and 3 Territorial Health Authorities (1961)

Program Elements	Degree of emphasis noted			
	Major	Intermediate	Minor	Not checked
Home Safety				
Falls	20	14	8	9
Suffocation	13	13	15	10
Poisoning	34	10	1	6
Firearms	4	13	23	11
Fire	15	16	10	10
Epidemiologic Studies	13	16	12	10
Vehicular or Traffic Safety				
Driver Education	2	10	17	22
Vehicle operator examination	8	6	13	24
Epidemiologic Studies	4	14	16	17
Recreational Safety				
Swimming	6	15	18	12
Boating	4	16	18	13
School Athletics	3	13	15	20
Epidemiologic Studies	4	10	17	20
Other				
Safety Seat Belts	7	2		
Farm Safety	4	3		
School Safety	1		1	
Industrial Safety		1		
Hunting Safety			1	
Kitchen Safety in Small Hospitals	1			
Family Injury Study	1			

It is somewhat surprising to note only 7 instances where interest is indicated in the field of farm safety. Although a fine job is being done by agricultural agencies in this field, it would certainly seem an appropriate concern of departments of health particularly in those states having a large farm population.

Within the specific program field of home accident control we find as might be expected, particular emphasis in the prevention of falls and poisoning with the latter most prominently mentioned. Running a close third to them is program concern with regard to prevention of fires.

In view of the unique position of health departments to study the epidemiologic pattern of accidental occurrences and injuries due to accidents, it is particularly surprising that there should be so few indications of a major interest in the epidemiology of vehicular or recreational accidents. It is true that approximately the same number of departments indicated an intermediate or minor emphasis on epidemiologic studies in these fields as in the field of home safety; but so much more data is needed that it would seem there is plenty of room for major emphasis by health agencies in the study of occurrence patterns of accidents in the vehicular and recreational fields.

PERSONNEL

Only 17 states reported no staff at all with program responsibilities in the field of accident control (see Table 2). Thirty agencies indicated that they now have either a full time director of their accident control program or other full time employees engaged in this field. 73 full time employees were reported amongst the 51 agencies: 13 directors and 60 others. Although this seems grossly inadequate in comparison to the magnitude of the problem, it is still a major evidence of progress which has occurred during the last few years. As might be expected the usual pattern is for no more than one to five full-time workers.

TABLE 2

PERSONNEL EMPLOYED IN ACCIDENT CONTROL ACTIVITIES

CATEGORY	NUMBER OF AGENCIES REPORTING		TOTAL INDIVIDUALS EMPLOYED
	Yes	No	
Full time director	13	38	13
Other full-time staff	17	34	60
Only part-time staff	4	47	-
Some staff (full-time or part-time)	34	17	73 (full-time)

There were five states that indicated their only staff consisted of a full time director – indicating that the program was primarily a coordination of services of different parts of the organization rather than services emanating from a single specialized unit. On the other hand, there were 8 states that listed only full time health department employees engaged in accident control activities, implying that little or nothing was done by other units of the organization. This seems improbable and may well have been a misinterpretation of the questionnaire. It seems highly unlikely that there would be a situation where either sanitation or public health nursing would fail to participate regardless of the presence (or lack of it) of a specialized accident control unit. Too often these activities are taken for granted rather than being added in to the total aggregate of accident control activities.

On the other hand there is indication of the (not unexpected) fact that others in the health department who do something in accident control usually regard that activity as a minor responsibility: for, only 13 states indicated that, in addition to their full time accident control personnel, there were others who spent a "major" portion of their time in this kind of activity; and there were 38 states that indicated that no others spent a major portion of their time in accident prevention.

Finally in view of the uniform interest which has been expressed in this field by administrators it would seem that there is still a surprisingly long way to go when 38 jurisdictions indicate no full time direction of accident control programs. Such full time direction is a way of not only mobilizing and coordinating the efforts of currently employed staff whose major responsibility lies in other fields but also of developing full time staff where it is justified by the stage of development of the program.

ORGANIZATIONAL PATTERN

The reporting jurisdictions indicated that accident control activities are directed or supervised within their agencies at various administrative levels. Actually the reports indicated accident control activity administration as follows:

Bureau	6
Division	22
Section	17
Service	1
Unit	1
Unlisted	4

However, there is no universal pattern of administrative hierachy amongst these titles. In 14 states bureaus outrank divisions, in 32 divisions outrank bureaus, and in 7 either sections or services outrank bureaus or divisions.

When we correct for these differences in administrative organization nomenclature, we find that accident control activities are administered within units representing hierarchical orders as follows:

Hierarchical order No. 1	(highest)	– 15
Hierarchical order No. 2		– 27
Hierarchical order No. 3		– 5
Not indicated		– 4

It is obvious from these data that in most instances accident control activities are administered by other than top organization components.

So far as the professional disciplines of the administrative unit are concerned these showed about as wide a variation as could be imagined. And it should be emphasized that this is not a listing of the disciplines contributing to accident prevention but rather those disciplines actually administering a program of accident control. They were reported as follows:

Health education	18 states
Maternal and child health	6 states
Environmental health	6 states
Occupational health and safety	3 states
Preventive medicine	2 states
Special health services	2 states
Local health services	1 state
Community health	1 state
Division of Home, farm and school safety	1 state
Medical health services	2 states
Disease control	1 state
Vital statistics	1 state
General administration	1 state
Unlisted	6 states

Undoubtedly this reflects the way in which many of the accident control programs were initiated. Those who have had to do with home safety in the first instance have been most frequently associated with either public health education or environmental health, depending on whether the emphasis in the beginning was primarily on an educational program or a housing program.

On the other hand, many of the programs were centered in the beginning on poison control or the prevention of infant suffocation which means that they "grew up" under the maternal and child health aegis. Naturally there can be little indication as to which (if any) of these patterns of program direction are preferable. They are a function of similarly great variations in attitude from one department to another concerning the proper place and role of this program amongst the galaxy of health activities. However, such groping for an optimum administrative pattern should eventually arrive at some principles of organization which would decrease the variety of solution somewhat!

The administrative nightmare is made even worse when we contemplate the additional disciplines without a major responsibility in the field contributing to accident control activites. A listing of these groups, all of whom contribute in an important fashion to one degree or another follows:

Public health nursing	27 states
Health Education	15 states
Environmental Health including Environmental Hygiene and Sanitation	19 states
Maternal and Child Health	13 states
Public Health Engineering	3 states
Occupational Health	6 states

Statistical service	7 states
Preventive Medicine	3 states
Industrial Hygiene	2 states
Chronic disease	2 states
Hospital and medical facilities	3 states
Mental health	1 state
Local Health Service	1 state
Nursing home inspection	1 state
Crippled children	1 state
Dental Hygiene	1 state

It is obvious that accident control is protean. Somewhere or other can be found an instance where nearly every professional discipline on the public health team contributes something.

GEOGRAPHICAL DIFFERENCES

It is particularly intriguing to conjecture about geographical differences in program emphasis. With differing populations and differing accident hazards such divergence in service pattern might be expected.

From the data collected it is not possible to say with certainty if this exists, but there is some indication that in the western states home safety is not so clearly predominent as in the south, middle states and northeast. Particularly in the latter area over twice the emphasis was voiced on home accident control as on concern with recreational safety (in the west they were nearly equal), with vehicular safety a relatively poor third - again in all areas except the west.

LOCAL HEALTH DEPARTMENT ROLE

I should like to add a few words about the role of the local health department in accident control, even though these remarks must be drawn only from personal experience, rather than data on a national scale.

First, any health educational effort aimed at changing people's personal habits can usually be best done with "indigenous" resources. Telling people from the state capitol is not enough. Local discussion groups using local experience and conforming to native custom are most likely to be effective. So some health unit providing local services (whether a city or county department or a state district organization) is needed, even though they use state or federally produced materials and conform to a state program plan.

Second, the local health department director is in a key position, working with other safety experts in his community, to mobilize resources of many other agencies (e.g. local safety councils, service clubs, recreational organizations, etc.)

Third, the locally employed sanitarians doing housing work and public health nurses doing home visiting, have an entree to special hazard groups that is unparalleled.

Fourth, particularly in the area of small plant industrial operations the local health department has a wealth of skills and material which is being utilized in many areas (though still much too infrequently) to strengthen occupational health programs including in-plant and home safety efforts. Services of nursing and health education personnel has been most frequently sought in this regard. Largely neglected has been the potential contribution by environmental engineers and epidemiologists of local health departments.

SUMMARY

It should be emphasized again that the data appearing here was collected only from state and territorial health authorities. The absolute figures concerning employed staff both full time and part time would have to be supplemented by similar data from local health departments to be meaningful. However, the patterns of service of personnel and of organization appearing here are probably not dissimilar to the patterns which would be found in official agencies at the local level.

There is at the same time an encouraging growth of professional personnel specializing in this field and a staggering residual need for greater numbers if the effort is to match the need.

It would seem that no well defined pattern of program emphasis is discernible as yet and doubtless will appear only after much more extensive exploitation of health department abilities in the field of epidemiologic research.

Organizationally the picture is complicated by the fact that some contribution to accident control is made by practically every unit of the official health agency. Thus coordination and stimulation by a small central "staff" type group is probably more appropriate than highly specialized direct "line" functions for a much larger service group.

It is not a question as to whether or not this activity should be a health education program or an environmental safety program per se. It is rather a question as to how all of the accident control elements of the health department program can best be coordinated and supplemented by the special interest and skills of a few full time workers. Presumably these are the kind of problems which will be thoroughly investigated by the Conference and resolved to one extent or another.

THE ENVIRONMENTAL APPROACH TO ACCIDENT PREVENTION

Henry C. Steed, Jr., M. P. H. *

INTRODUCTION

Over the years, public health has set an enviable record in practically eliminating suffering and death from many diseases that were once claiming the lives of thousands of our citizens. Such diseases as typhoid fever, malaria, smallpox, and many others are relatively rare today among our people. The environment has played an important role in the cause of many diseases and environmental controls have contributed greatly toward their elimination. Environmental health, as in the past, will continue to be an important part of the total public health field.

During the past decade, as accidents came to the forefront as a crippler and killer, health departments began to recognize the relationship of accidental injury to health. In the late 1940's the W. K. Kellogg Foundation made grants to selected local health departments for the purpose of establishing projects to study home accidents and programing for prevention. This was followed in 1953 with grants to eight state health departments to study the feasibility of conducting home accident prevention programs at the state level. Many of these projects spread to other state and local departments, and were expanded into total accident prevention programs.

The definition of public health as adopted by the World Health Organization states that "health is a state of complete physical, mental, and social well being and not merely the absence of disease and infirmity." Certainly the impact of accidental injury, both fatal and non-fatal, upon the people, affects their physical state as well as their mental and social well-being. There is no doubt that the present day professional public health worker has a responsibility in this field. Accident prevention while only one problem of the expanding horizon of public health, is one of the most important. All disciplines must join hands in attacking the problem, but first they must learn to recognize it and to become aware of actions that could lead to its control.

This paper will discuss the effect that the environment has on accident causation, the effect that environmental controls can have on accident prevention and, to a limited extent, the role of the environmental health worker in accident prevention. The paper will include approaches to the four principal classes of accidents: home, motor vehicle, occupational, and public.

In discussing the role of the environmental health worker in accident prevention, this paper, in addition to defining the role of the environmentalist in accident prevention, will attempt to outline certain methods of performing this defined role. Effort has been made to state these methods so that they intermesh, in most cases, with the present familiar activities of the engineer and sanitarian. Certain special campaign activities, that may or may not be related to the environmental health field, will be discussed. In addition, the optimum qualifications for training and orientation in accident prevention will be brought out. A certain knowledge of how an accident occurs is necessary in order to create an awareness of the problems, as well as develop a knowledge regarding the many underlying factors in accident causation.

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ACCIDENTS AS A PROBLEM

In a time of expanding public health activity, accidents have become one of this country's major public health problems. Accidents rank fourth as a cause of death for all age groups. However, in the most productive years of life, ages one through thirty-four, accidental deaths are the number one killer. Just over forty-five percent of these deaths occur as the result of motor vehicle accidents, while twenty-five percent occur as the result of home accidents.

According to the information from the National Health Survey approximately 50,000,000 persons a year suffer accidental injuries that require medical care or result in at least one day loss of time from usual activities. Home accidents account for an estimated forty-five percent of these injuries. Less than one-tenth are estimated to be caused by motor vehicle accidents.

Non-fatal injuries due to accidents are extremely important as a public health problem. Although there is a shortage of data concerning the national injury picture, several good studies have been made, upon which fairly accurate estimates can be based. References to some of these studies are made here, and it should be noted that in each of these references the environmental aspects of the accident are clearly evident.

A study of home injuries made in Washtenaw County, Michigan, during 1951 and 1952 reported that "findings from the sample interview involving 2,456 homes indicates that each person may have approximately six home injuries per year."[1]

Other facts derived from the study were:

> The most frequent type of injury is "cuts" and those parts of the body most often involved are the fingers and hands. Injuries to females occur with highest frequency in the kitchen and with the next highest frequency in the yard: for injuries to males, the most frequent locations are the yard and kitchen, in that order. Home injuries are relatively non-selective by age and sex for those under 15 years of age.

In a study of home injuries in Ware County, Georgia, it was estimated that the major injury rate was 36.4 per 1,000 persons per year and that the minor injury rate was 72.4 per 1,000 persons per week or 3.8 per person per year.[2] Rates were highest among younger and older persons than at other ages. However, rates in the under one year age group were lower than those aged one through four and five through nine years.

Again as reported in the Washtenaw study the yard was the most frequently reported place of injury. "Cut by sharp object" was the most frequent manner of injury and "cuts" the most frequent nature of injury reported.

It should be emphasized here that more study needs to be done on non-fatal accidental injuries. It is felt that the epidemiological techniques, now employed by the health worker, can be used to determine the underlying causes of accidental injury which are so important to planning prevention programs.

It is aptly illustrated in both mortality and morbidity statistics on accidents that the environment plays an important role in accident causation. This would indicate that the environmental health worker can and should be used in an environmental approach to adequate accident control.

FACTORS IN ACCIDENT OCCURRENCE

The dictionary definition of the word accident is a very poor one for describing what happens in an accident-situation. It tends to leave the impression that accidents are inevitable and that there is not much that can be done to prevent them. It further gives the impression that an accident is a sudden occurrence, an unforeseen happening. Neither of these is true, because accidents are often slow in onset and usually are foreseeable, even predictable, if the person is able to recognize and be aware of the factors leading to the accidental occurrence.

In the publication entitled, "Uniform Definitions of Home Accidents," produced by the U.S. Department of Health, Education, and Welfare, a concept of a home accident sequence illustrating the dynamics behind a home accident is developed.[2] This concept very aptly illustrates how accident prevention efforts may prevent injury and property damage. The concept holds that there are four factors leading up to a "point of no return" beyond which may be measurable or recognizable results such as injury, death, or property damage. These factors are:

(1) background factors which involve the susceptibility of a person (human) as well as a potential produced by unsafe conditions (environmental);

(2) the initiating factors which involve a change in the pattern of the human action as well as introduce the environmental agent of an accident;

(3) the intermediate factors, which are special physiological and mental factors of the individual, the inability of the individual to recognize danger, and environmental factors such as darkness, explosive conditions, or "make-shift" arrangements, and;

(4) the immediate factor known as the "unsafe act" or "trigger mechanism" which is found at the "point of no return." A combination of these factors leads in most cases to a recognizable or measurable result such as injury, death, or property damage. This concept can apply to all classes of accidents including home, motor vehicle, work, and public accidents.

With this concept it is easy to recognize that there are many factors behind an accidental occurrence, and that accidents are not something that "just happen." If public health workers can be made aware of the basic factors lying behind this occurrence, they will be able to evaluate and do a more effective job in preventing the occurrence of accidents. There are causes for all accidents and therefore they can be prevented.

There are two major divisions of the factors in an accidental occurrence, environmental and human. An accident always involves one or both of these major factors, usually both.

The human factor is the least tangible and the most difficult to recognize and measure, and it is one in which we at present know least about. It involves human behavior and the necessity for the change of such behavior to prevent accidents. Examples of human factors would be the physical condition of the individual, the emotional stability of the person, and such conditions as haste, fatigue, anger, poor judgment, and intelligence. It is important to stress here the importance of the need for extensive research into the human factors in Accident Prevention.

Environmental factors in an accident occurrence refer to the many adverse conditions introduced through the environment of man. These are commonly called accident hazards and would involve such things as the condition of floors, the mechanical condition and design of automobiles, the structural condition of stairs, the condition of lighting, ventilation, and the many ramifications of the environment in which man operates. Unlike human factors these conditions of the environment can be observed and measured and, this being true, can be corrected prior to an accidental occurrence. It is important here to point out that at the present time, insofar as the knowledge of accidents is concerned, we know the most about environmental factors in the accident prevention field. The approach to the accident problem in this paper will be principally directed toward the environmental factors of the accident problem.

AGE IN ACCIDENT CAUSATION

Age is a key in the prevention of accidents. It is important to plan prevention programs based on the fact that many causes of accidents are closely related to certain specific age groups. To illustrate that age patterns play an important part in accidents, it is important to note that falls occurring in the home and resulting in death are mainly a problem of the aged.

Fatality statistics in Georgia point out that of all deaths due to accidental falls in the home, seventy-eight percent occur for the age group of sixty-five years and older. Burns occur mostly in the preschool and older age groups, and are more common in females than in males. Suffocation in the home occurs principally in infants. Poisonings are particularly high in young children.

This effect that age has on the accident problem indicates the importance of designing program efforts directed at the age groups most often affected, and important in this effort is the need for applying environmental controls that will protect certain age groups.

RESEARCH INTO THE ENVIRONMENTAL FACTORS OF ACCIDENTS

Research into accidents during the past few years has placed a great deal of emphasis on the environmental factors involved in the accident occurrence. As forerunners in this field, industrial safety engineers who pioneered in the field of investigative procedures in accident prevention, have developed highly successful environmental controls in the prevention of industrial and occupational accidents. These controls were developed through detailed study and investigative work into the basic and underlying causes of accidents in industry. Principal studies in recent years in both the home safety and highway safety fields have stressed environmental factors and have produced measures that can be applied to controlling accidents.

In 1952, an epidemiologic study was established in the Department of Public Health and Preventive Medicine at the Cornell University Medical College, now known as the Automotive Crash Injury Research Project. This project was and still is a cooperative team effort of medical, public health, and police groups directed at investigating thoroughly the various aspects of the automotive crash injury problem.

This study has analyzed typical problems, such as relation of speed to injury, effect of contact of certain parts of the interior of the automobile with the victim, a study of crashes and resulting injury when occupants were using seat belts, and the problems involved in ejection of victims from the automobile. Although the results of this project have produced information important to the human factors by defining behavioral problems to some extent, it is important to note that the results have brought about some rather drastic changes insofar as automotive manufacturing is concerned, in the design of the automobile. This study emphasized the importance of and brought about such changes as the safety door latch, and the dishtype steering wheel, which is standard equipment on almost all late-mode' automobiles. It has also emphasized the importance of using seat belts and of having padded dashboards and visors. In applying the environmental controls brought about by improving the safety design of an automobile, we know that the degree of injury can be greatly reduced and that it has been estimated that deaths from motor vehicle accidents can be reduced by as much as fifty percent from the use of seat belts alone. It is still important, however, to keep in mind that these changes will not reduce the staggering toll of property loss nor the high number of accidents.

As stated previously a study of home injuries in Washtenaw County, Michigan, during the years 1951-52, gave us the first realistic information that we had regarding the magnitude of the home injury problem. This study also gave us the first indications of the importance of the environmental factors in home accident occurrence. It pointed out that "cuts" were the most frequent type of injury and that injuries to females occur with the highest frequency in the kitchen, and to males the highest frequency in the yard. All of these findings related environmental hazards that were important in the area of home accident occurrence.

Also stated previously, in a study of home accident injuries in Ware County, Georgia, it was estimated that the major and minor injury rates were relatively comparable to those found in the Washtenaw County study. The findings in this study pointed out that the yard was the most frequently reported place of major injury and that "cuts by sharp objects" was the most frequent manner of injury. Cuts as a whole were the most frequent nature of injury reported.

Environmental hazards and their relationship to accidental occurrence in this study were definitely apparent. In relating the fact that most accidents occurred in the yard, we found that the objects involved in most of these accidents were common litter normally found on poorly maintained premises, such as broken bottles, tin cans and nail-studded boards. This pointed up important environmental factors where control measures could be successfully applied.

Several studies have been conducted to point up the relation between the condition of housing to accidents. One of these studies was conducted in Augusta, Georgia, in 1952 through 1953 and based on information from a housing survey of two census tracts of this city, and of accidents reported during this period through the emergency room of a large general hospital. 4

TABLE I

Accidental Injuries to Residents of Census Tracts V and VI of Augusta, Georgia Treated in Emergency Room of University Hospital, Number and Rate by class of Housing Augusta, Richmond County, Georgia, 1953

TYPE OF ACCIDENT*	CLASS OF HOUSING											
	NUMBER						RATE PER 1,000 POPULATION					
	TOTAL	A	B	C	D	E	TOTAL	A	B	C	D	E
Total all accidents	423	130	140	42	27	84	51.1	43.4	51.9	57.8	76.1	55.5
Occupational	54	10	16	6	6	16	6.5	3.3	5.9	8.3	16.9	10.6
Home	173	53	57	13	11	39	20.9	17.7	21.2	17.9	31.0	25.8
Motor Vehicle	98	32	40	12	6	8	11.8	10.7	14.8	16.5	16.9	5.3
Public	83	29	22	10	4	18	10.0	9.7	8.2	13.8	11.3	11.9
Unknown	15	6	5	1	-	3	1.8	2.0	1.9	1.4	-	2.0

*According to National Safety Council Definition

NOTE: The classification of housing by the use of the letters A, B, C, D, and E, is based on the American Public Health Association's Appraisal Method for Measuring the Quality of Housing. This method classifies the quality of housing by use of a penalty-point system. Class A housing is considered the best, while Class E is considered as grossly substandard or the worst.

Additional studies and work in the field of housing have indicated that the environment in which people live not only contributes to an increase in incidence of disease and accidents, but that this increase is related to the sociological aspects of the problem which are brought about by this poor environment. This study indicated that as the condition of housing became poorer the incidence of accidents, generally in all classes, increased to varying degrees. For example, the rate of injury for home accidents almost doubled for those people living in sub-standard dwellings.

THE ENVIRONMENT IN ACCIDENT PREVENTION

We have referred to environmental factors as the one area in which we have the most knowledge and which we at present can apply the most effective control measures. It is not intended that the environmental health worker, however, should be the only discipline on the public health team to contribute to environmental control measures. When applied to public health practice, the problem of accident prevention, involving both the human and environmental factors, would include not only the environmentalist but also all other disciplines of public health. In this ever-growing technical world with its continuous flow of new and sometimes hazardous products on the market, people must be aware of the conditions that surround them and of the methods whereby they can correct any conditions that may cause an accident.

The fact that we know the most about environmental factors does not remove any emphasis that should be placed on the importance of human factors. However, with the knowledge that we have, regarding accident hazards and the environment in which man operates, we can devise programs and preventive measures to control accidents through the control of environmental hazards. Industrial safety engineers have enjoyed excellent success in controlling accidents through the technique of controlling the environment in which man works. We should not, however, take away from the importance of learning all that we can about human factors, and we should ever keep in mind the necessity for viewing environmental factors and human factors each within relationship to the other. Although we may enjoy a degree of control of accidents by controlling, where possible, the environment, we will never be able to reduce accidents to their lowest level unless we learn why man behaves as he does and how this human behavior affects the accident picture.

PREVENTING ACCIDENTS THROUGH CONTROL OF THE ENVIRONMENT

Much effort has been made in the field of accident prevention in the years past by many organizations and agencies. For example, police groups have been very active in traffic safety. Industrial safety engineers have an enviable record in the reduction of occupational accidents through safety education and changes in the working environment. A few years ago it was recognized by such agencies as the National Safety Council, the United States Public Health Service, and the W. K. Kellogg Foundation that little coordinated effort was being carried on in the area of home accident prevention.

As a result of this change of emphasis in public health, health departments found they could apply their skills and knowledge in many ways in the field of accident prevention. Fundamental skills of important use in the field of accident prevention are:

(1) Epidemiological techniques in the study of accident causation.

(2) Inspection and follow-up techniques for the reduction of environmental hazards.

(3) Educational techniques in control.

Four guidelines should be set up under which the health department program can work. These are as follows:

(1) Home accident prevention should be the major "activity" area of public health.

(2) Traffic safety should be done on a cooperative basis with the Public Safety and other traffic safety organizations. The health department's chief interests at present are in studies of the traffic accident problem. Prevention activities can be added as the role of public health is more clearly defined.

(3) Activities in the field of public safety should be integrated into the existing programs of public health where indicated. This should be done in close cooperation with other agencies in this field of endeavor. Some activities have already been promoted in the area of public safety along with the home safety program.

(4) Activities in occupational safety should be on a cooperative basis with existing official and volunteer organizations now responsible for this area. Divisions of Industrial Hygiene and Occupational Health of the health departments have for some time contributed to the field of occupational safety.

The studies pointed out in this paper plus many others have pinpointed the importance of applying environmental controls in the control of accidents. Many programs are now being conducted in the accident prevention field which stress environmental controls.

THE ENVIRONMENTAL HEALTH WORKER IN ACCIDENT PREVENTION

With the technical knowledge and ability that the environmental health worker has, he can realistically study the causes and the factors leading up to accidents. He can evaluate the chain of factors involved, and determine which place he can most effectively break this chain. This done, he can intelligently and practically plan prevention programs that will work.

Practicality is the key word in prevention. There must be a good chance that the people will take the recommended action necessary to correct an accident situation, and above all they must be able to afford this protection. Without this approach, no changes can be expected. The environmentalist must also call on all the resources of the community to help in this program.

As stated previously, environmental health is a major portion of all public health programs, and is the one aspect in which public health engineers and sanitarians do the majority of their work. We know that environmental factors contribute greatly to accident causation. Equipped with his technical and educational abilities, the environmentalist can launch into the accident prevention field by:

(1) providing community leadership,

(2) integrating accident prevention knowledge and know-how with his other programs at every opportunity,

(3) offering consultation to others closely related to the problem and,

(4) participating in studies relative to the problem.

A State Health Department should use in general a five point approach to an accident prevention program. These points are:

(1) Promotion and consultation with local, regional and/or district health departments in the state in developing and carrying out accident prevention programs.

(2) Cooperative action with other agencies and groups in the accident prevention field.

(3) Preparation, procurement, and distribution of educational materials.

(4) Conducting of continuing research, study, and evaluation on the accident problem, activities, and programs.

(5) Providing of training for health personnel in accident prevention.

The state environmental health worker can key his accident prevention activities within the above guidelines by rendering services to the local environmental health personnel.

The local level is the "front" line in public health. Activities that contribute to the prevention of accidents must reach the people on the "front line". The following paragraphs will briefly outline some of the various activities that can be carried out by environmental and other public health workers through existing programs in the general area of environmental health or as specialized activities.

Housing Programs

The integration of home accident prevention into a housing program may be accomplished by:

(1) Including inspections for hazards in the home in all inspections of housing conditions.

(2) Integrating safety factors into housing codes.

(3) Including educational aspects of safety that cannot be covered in the code.

(4) Advising and consulting with the building trades on building safety into new homes.

(5) Including safety factors in subdivision approval and planning.

As has been illustrated, accidents and poor housing conditions go hand in hand. This is becoming more and more apparent to the health officials of our country. Strong emphasis is now being placed on accidents and their relation to poor housing and on the need for applying accident prevention techniques in housing rehabilitation and conservation programs. Most housing regulations now being adopted are including specific standards for safety, and it is currently felt that doing accident prevention programs through a well planned and operative housing hygiene program is one of the important areas where public health can contribute to the field of home safety. Not only in housing rehabilitation programs should the emphasis be placed, but emphasis should be focused in home planning and new construction. It is apparent at this time that safety built into the home is the easiest way of assuring a safer environment.

Tourist and Trailer Court Inspection Program

One of the chief tools in attracting tourist trade in many states is the promotion of attractive and clean tourist and trailer courts. Also, one of the major ways in which such establishments receive adverse publicity is from accidental deaths in these establishments as a result of suffocation or gas poisoning from defective heating equipment. A common regulation found in the codes of most health departments is one that controls

tourist and trailer courts. Such regulations should contain items relative to safety in these establishments. Such regulations should contain controls aimed at (1) unvented unit heaters: (2) non-skid floors: (3) grab rails in shower stalls: (4) driveways safely designed and well-lighted.

Special Activities to Prevent Fires and Burn Injuries

Burns in homes and public buildings are a major cause of accidental death in the United States. In the home alone burns from fire and explosion account for over 5,000 deaths annually. In several southeastern states, burns in the home are the leading cause of home accidental death, surpassing falls, which is the leading cause of the national level.

The environmental health worker can play an important role in the prevention of such injuries by assisting in or conducting programs of inspection and correction of unsafe heating equipment in homes and public buildings. If official fire prevention agencies exist in the community, he should coordinate his program with these agencies.

Many homes, especially in mild climatic regions, contain fireplaces as a major source of heat. This is particularly true in rural areas. In Georgia, a campaign to protect people from open fireplaces is conducted through local health departments. This involves urging people to buy or build a fire screen for their open fireplace. This project, which was originally developed at the instigation of a local sanitarian, is illustrated in the attached diagram titled, "Build This Firescreen For Safety."

Swimming Pool and Bathing Area Program

Swimming is one of the favorite pastimes of the American people: however, it claims over three hundred lives annually. Most local health departments have programs for the inspection and control of the sanitary conditions of swimming pools, and certainly this is one area where accident prevention is important.

In the inspection of and planning for pools and bathing areas, the sanitarian should be on the alert for the following items of safety:

(1) Non-skid surfaces on walkways and ramps.

(2) Clear markings of water depths on sides of pools, and beach areas roped off at depth intervals.

(3) Life guard on duty at all times.

(4) Life saving equipment available and ready for instant use.

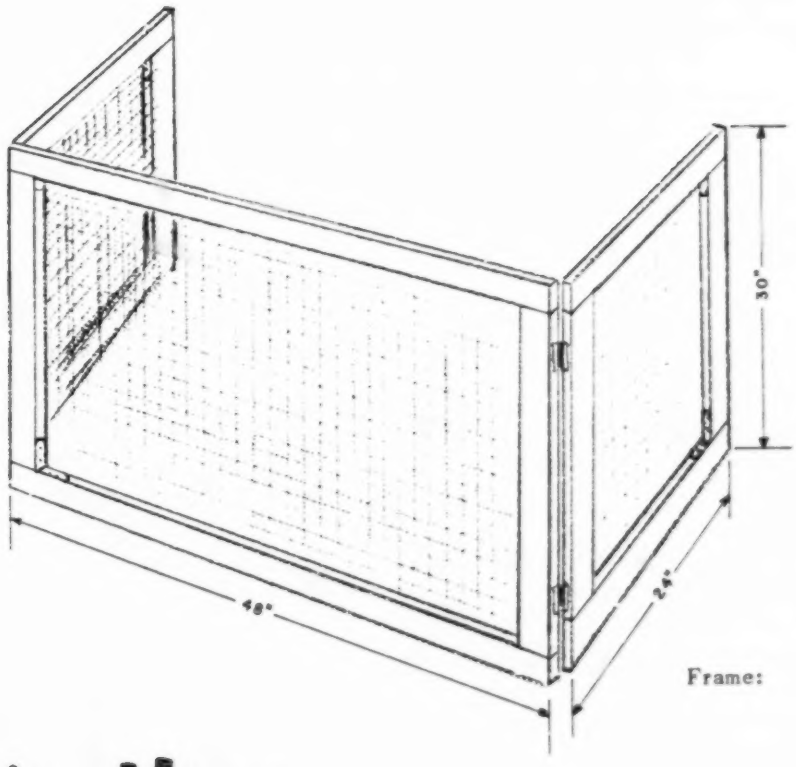
(5) Resuscitation equipment available and life guard properly trained in its use.

(6) Prohibition against horseplay and running in the pool area.

(7) Segregation of non-swimmers into shallow areas.

(8) Diving areas roped off for this purpose only.

Build This Fire Screen For Safety



Here's How

Materials Needed

Frame:	1" x 2" wood (purchased or built from scraps) Wire molding to cover rough-edges.
Screen:	1/2" mesh metal hardware cloth (30" x 8')
Hardware:	4 2" hinges 12 corner braces (if desired) Nails and wood screws

1. Build one frame (front panel) 48" x 30"; two side frames 30" x 24". Do not paint or varnish wood. Use scrap lumber if available. Join corners of frame by nailing one member into the butt of the other member, using at least three finishing nails.

2. Metal corner braces may be used on each inside corner of frame for additional support.

3. Fasten 1/2" mesh metal hardward cloth to frame, using small wire or screen staples.

4. Rough edges of hardware cloth may be covered by nailing small strips of wood or molding over hardware cloth where it joins the frame.

5. The three sections of the frame are joined with hinges so that they fold inward. Size of the hinges should be at least 2 inches.

6. Remove any splinters or rough edges and screen is ready for use.

Home Safety Unit
Georgia Department of Public Health

(9) Prohibition against pop bottles in the swimming area.

(10) Removal of all underwater obstructions in the swimming area.

(11) Adequate lighting for night swimming.

Special Home Hazard Inspection Service

For those local health departments that have adequate environmental health personnel, a special service program for inspection of homes for hazardous conditions could be instituted. Such a program would not be an enforcement program, but would be conducted on a voluntary request basis. This type of program has been tried in a few areas, and the step-by-step procedure for the program is as follows:

(1) The public is advised that the service is available.

(2) The public may request the health department to inspect their homes for hazardous conditions.

(3) A sanitarian, trained in hazard recognition and prevention, inspects the home using an inspection sheet specifically designed for this purpose.

(4) After the inspection is completed, the sanitarian discusses checked items with the occupant, and advises on corrective measures.

(5) A follow-up may be made if necessary and if desired by the occupant.

This type of program promises to be very effective. However, one of the chief criterions for the success of such a program would be effective education along with the inspection. The main drawback of the program is the need for additional personnel as more requests are made for this service. An illustration of the type of inspection form that could be used is shown in the enclosed form titled, "Inspection Form for Hazards in the Home."

Special Clean-Up Campaigns

Clean-up campaigns have been a very effective means of promoting accident prevention through public health. Annual spring clean-up campaigns can include a great deal of educational material related to accidents in view of the fact that the leading cause of major injury is cuts and puncture wounds which are traced back to litter in the yards. The promotion of this project through civic organizations and public health departments has enjoyed a continuing success in the State of Georgia. Also inclusion of techniques used in clean-up campaigns integrated with insect and rodent control programs is an effective means of doing home safety.

We now see that it is possible for health departments to successfully apply environmental controls in the control of accidents as have other organizations. The need today is for health departments to recognize and accept their responsibility in this field and to plan well organized, practical programs adequately staffed to carry out preventive measures.

INSPECTION FORM FOR HAZARDS IN THE HOME

City, County or District

Name Address

Accidents in the home are the seventh leading cause of death in Georgia. Moreover, there are an estimated 130,000 major home injuries in the state each year.

This voluntary inspection is made to show hazards that may endanger the safety of persons living in this house. Hazardous conditions are indicated on this form with a cross (X). Your Health Department urges you to correct conditions so marked as they are potential causes of accidents.

(1) **Floors**—Smooth and in good repair ( ); not slippery ( ); free of litter and tripping hazards ( ); walk-through areas clear of furniture and appliances ( ); dangerous changes in floor level marked ( ); rugs lay flat ( ); rugs non-skid ( ); closed railing on all porches and platforms ( ). ( )

(2) **Walls, Windows, and Doors**—Wall smooth and free of splinters and unnecessary projections ( ); no loose plaster, piping, or overhangs in ceiling ( ); windows protected by sturdy screens ( ); doors open freely and away from traffic areas ( ). ( )

(3) **Steps**—Good repair with no loose treads ( ); risers of uniform height ( ); no litter or loose items on stairs ( ); non-skid surfaces ( ); no loose edges on carpeting ( ); well lighted ( ); sturdy hand-rails on each side ( );small children protected by gates or locked door at top and/or bottom of steps ( ). ( )

(4) **Yards, Drives, and Walkways**—Clean and free of litter, nails, tin cans, broken glass, rocks, etc. ( ); no holes or other tripping hazards ( ); ponds, wells, cisterns, septic tanks, etc., securely covered or fenced in ( ); steep banks and drop-offs protected by fence or wall ( ); no sharp projections from structures, or low-hanging shrubs and trees ( ); wire container available for burning trash ( ); non-skid finish on walks, drives, and terraces ( ); no unusual steps or drop-offs on walks ( ); no shrubs or other sight obstructions at intersections of walks, driveways, and street ( ); walks, driveways, steps, terraces, etc., well lighted ( ). ( )

(5) **Storage Spaces**—Shelves, hooks, and hangers strong enough to hold heavy objects ( ); storage spaces well lighted ( ); no closets that can be locked by children ( ); cabinets accessible without climbing ( ); storage for knives and other cutting equipment not accessible to children ( ); knives stored in kitchen drawers have handles facing outward ( ); fire extinguisher in house ( ); garden tools, lawn mowers, kept in adequate storage ( ); poisons, insecticides, medicines, cleaning agents, etc., stored out of reach of children or in locked cabinets ( ); all poisons and insecticides properly labeled ( ); all medicines in cabinet clearly labeled ( ); no old medicines in medicine cabinet ( ); oily rags in covered metal container ( ) fuel oils for heating equipment in closed metal tanks and located in yard a safe distance from any structure ( ); paints, solvents, petroleum products stored in container especially made for this purpose and clearly marked ( ); paints, solvents, petroleum products stored inaccessible to children and away from heat ( ); waste paper and other inflammable wastes disposed of and not stored in basements, garages, or attics ( ); matches stored in safe container away from heat and not accessible to children ( ); ashes stored in metal containers and removed regularly ( ); old storage chest, cabinets, refrigerators, etc., removed from premises or rendered harmless by removing doors ( ). ( )

(6) **Heating Equipment**—Heating equipment inspected and maintained yearly ( ); flues, vents, and chimneys in good repair ( ); heating equipment located away from work or traffic areas ( ); gas heating equipment AGA-approved type ( ); automatic gas heating equipment has automatic pilot cut-off ( ); no kerosene or other petroleum products accessible or used for starting or bringing up fires in coal or wood stoves ( ); open fireplace screened ( ); where heating units are located close to walls, floors, and ceilings, metal flashing is used for fire protection ( ); curtains, drapes, and other inflammable materials located away from unit heaters ( ); gas and oil heaters vented to the outside ( ); no flexible tubing used to connect gas heaters and stoves ( ); open front heaters protected by guards ( ); floor furnaces have guards to prevent small children from falling on them ( ); hot water heaters equipped with pressure relief valve to outside of building ( ). ( )

(7) **Electric Wiring and Appliances**—All normal lighting circuits equipped with fuses or circuit breakers no larger than 15 amps. ( ); supply of new fuses on hand ( ); electric wiring inspected periodically for bad connections or worn insulation ( ); no house circuits overloaded with too many appliances ( ); main switch and fuse box enclosed ( ); protection for wiring around bends and through walls and floors ( ); light sockets have insulated pull chains ( ); outlets in bathroom located away from tub or shower ( ); outlets covered when not in use ( ); appliances such as washing machine, radio, TV, stove, etc., grounded ( ); all cords and appliances in good repair ( ); adequate lighting in all available areas of house including basement, attics, and garages ( ); attic lights, bed lamps, flashlight or other suitable illumination available at night ( ); lightning arrestors on all outside wires entering house especially TV antennas, aerials, etc. ( ). ( )

(8) **Miscellaneous**—Chairs, tables, stools, etc., sturdy and in good repair ( ); baby beds constructed so that child cannot fall out or get head caught in rungs or between bed and other objects ( ); step-stools or ladders in good repair and sturdy ( ); circulating or vent fans have blade guard ( ); hand hold or grab-rail available in tub or shower ( ); rubber mat in tub ( ). ( )

Date Inspection Made By

GEORGIA DEPARTMENT OF PUBLIC HEALTH

EH 54—0000

It is important to note that health departments should never take the attitude that they can satisfactorily carry out an accident prevention program alone. In fact, to reduce injuries due to accidents requires efforts on the part of official agencies, volunteer agencies, civic organizations, and most important of all the family itself. The key is a well coordinated effort among all the groups in a community to obtain maximum results and to prevent the various agencies and organizations from branching out on too many tangents, which is one of the common errors made in the accident prevention field today. Health department personnel should assist, as well as seek assistance from other organizations engaged in accident prevention. They should lead in those programs where it is practical and feasible for them to do so and they should render their full-hearted support in efforts to other programs where it is indicated.

TRAINING

In the above paragraphs an attempt has been made to briefly point out some of the areas in which the environmental health worker may do accident prevention. With the technical training and ability he has, there is no reason he cannot be effective in this field.

As a supplement to the training and abilities of the sanitarian, an awareness of accident causation and prevention needs to be developed. This must be done by additional training in accident prevention, and is a requirement before undertaking such a program.

Inservice training in safety can be a valuable tool in furthering accident prevention and especially where new programs are being started at the local level. This is often accomplished through staff conferences on the regional, district, or county level of health departments, using the resources of those experienced in accident prevention. The Georgia Department of Public Health used this approach by conducting orientation seminars for local health departments and personnel. Stress was placed on the need for health officers, supervisors, etc., to conduct inservice training programs for their staff personnel. Accident prevention should be specifically included in orientation and training for new public health personnel.

There is an urgent need for more emphasis to be placed on the accident problem and prevention in the programs of our schools of public health. Today it is more or less included as something we should do something about, but not enough stress on what or how is provided. In view of the effect that accidents have as a public health problem, it is apparent that more opportunities for work in this area should be offered. This work should cover the dynamics of accident occurrence, methods and techniques applicable to accident prevention, and needs and methods in accident research. In North Carolina two major areas of activity involving cooperative effort between the State Health Department and the School of Public Health at the University of North Carolina have been reported in a paper titled, "Relationships Between the School of Public Health and the State Health Department Home Safety Program."[3] This paper brings out needs for research and training in accident prevention short courses. This is only a beginning to the real needs, however.

EVALUATION

Several varied activities pertaining to accident prevention have been discussed in this paper. These activities can be looked upon as individual activities with their own

objectives. For example, a clean-up campaign is one activity that has been stressed as being directly related to accident prevention. One objective of such a campaign is to remove accumulations of trash and litter in the yards of the community. Evaluation is then based on the number of yards cleaned up which was the stated objectives of the campaign.

The varied activities discussed are integral parts of a total accident prevention program. In evaluating the program, we must consider the evaluation of the individual activities. The sum of the evaluation of these individual activities may be used in evaluating the total accident prevention program and its ultimate objective of reducing death and injury due to accidents.

There is a critical need for the development of evaluation techniques for both program and activities of health departments in this field. Time has not permitted the deserved coverage of this subject in this paper. Reference is made to the "Report of the First National Conference on Evaluation in Public Health."[2] This conference was held at the School of Public Health, University of Michigan, in 1955. Special reference is made to the report of the Accident Section of this conference. Although this reference does not specifically state step-by-step procedure by which evaluation may be accomplished, it does cite clearly problems involved and an approach to procedures relative to evaluation.

SUMMARY

Accidents are a major public health problem and as such demand the attention and efforts of professional public health people. Usually both environmental and human factors are involved in any accident occurrence and in considering these aspects one must be viewed in relation to the other. It is important to note, that most knowledge in the field of accidents is in the area of the environmental factors and that most knowledge needed is in the area of the human factors.

Much research has been conducted in the accident prevention field, a good portion of which has been related to the environmental factors. A great deal of the research in the automotive safety field has been related to the environmental aspects of automobile design and to the seriousness of injury caused by poor design. Most of the home safety studies done in the past years have shown definite indications that environmental factors are very important in the causation of accidents, and there is a strong relationship between the condition of housing and the occurrence of accidents.

Many programs have been planned in the area of environmental control of accidents. Automotive design has improved the environment in which a man rides and safety features are now becoming standard equipment on new automobiles. Health department programs in housing, fire prevention, clean-up campaigns, and in many other areas, have been successfully undertaken, and indications are that they can contribute to the further reduction of accidents.

The importance of the public health worker in the field of accident prevention cannot be underestimated. Where practical, he must assume leadership in certain programs and must render wholehearted support to the efforts of others in the field of accident prevention. The techniques and knowledge of the public health worker lend themselves to this field. The public health worker may very well be the professional person that brings about a break-through in the field of accident prevention.

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